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Building Code

PASSED AUGUST 14, 1924

ZONING ORDINANCE PLUMBING ORDINANCE

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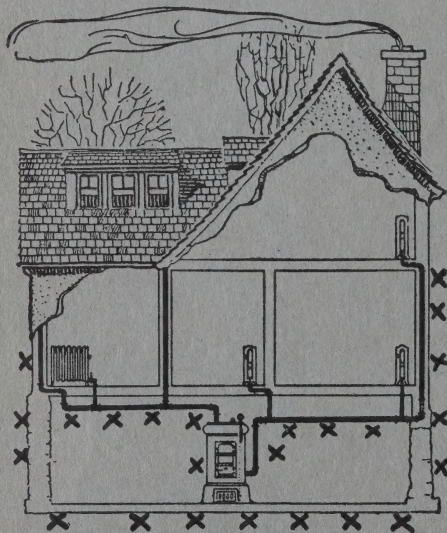
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Index to Building Code

PART I.

Topic	Scope of Building	Sec. No.	Page
Alterations		4	5
Buildings Not Included		7	6
Change of Use		5	5
Existing Buildings		6	6
Fees for Permit		9	7
Fire Limits		2	5
New Buildings and Additions		3	5
Ordinance Known as Building Code		1	5
Permit Required		8	6

PART II

DEFINITIONS AND STANDARDS

Basement	16	10
(First Floor)		10
(Number of Stories)		10
Combustible Partitions or Ceilings	19	14
Exterior Enclosed Stairway	20	15
Fire Escapes	22	18
(Location)		18
(Exits to Fire Escapes)		18
(Material and Strength)		18
(Platforms)		18
(Brackets)	22	19
(Stairways)		19
(Balanced Stairways)	22	20
(Railings)		20
(Roof Ladder)	22	21
(Standpipe)		21
Fireproof Construction	10	7
Frame Buildings	14	10
Height of a Building	15	10
Horizontal Exits	21	17
Incombustible Roof Covering	17	10
Interior Enclosed Stairway	20	16
(Stair Exits)		16
1—Width		16
2—Handrails		16
Location and Maintenance of Exits	24	23
Mill Construction	12	9
Ordinary Construction	13	10
Protected Construction	11	8
Semi-Fireproof Ceiling	19	14
Semi-Fireproof Partitions	19	13
Stairways and Exits	20	14
Standard Exit Doors	23	23
Standpipes, Fire Extinguishers, Sprinklers	25	24
(Automatic Sprinklers)		24
(Fire Extinguishers)		24
(Interior Standpipes)		24
Standard Fire Door	19	13
Standard Fireproof Enclosure or Partition		13
Standard Fire Stops		13
Standard Fire Window		13
Street, Alley, Court	18	13

PART III

GENERAL REQUIREMENTS

Air Pipes and Registers	33	31
(Registers)		31
(Hot Air and Ventilating Flues)		32
Boilers, Furnaces and Stoves	30	29
(Fireproof Room)		29
(Protection of Floor)		29
(Protection of Walls and Ceiling)		29
Chimneys and Stacks	34	32
(Metal Smoke Stacks)		33
(Wind Pressure)		33
Design and Supervision of Buildings	26	25
(Unsafe or Unsanitary Buildings)		25
Elevator Enclosures	38	35
Electrical Work	36	34
Floor Areas	28	26
Height and Class of Construction	27	25
Lights	35	33
Protection for Windows	40	40
Size of Courts	29	28
Smoke Pipes	31	31
Steam Pipes	32	31
Special Hazards	37	34
(Laundry Drying Rooms)		34
(Dry Cleaning Establishments)		34
(Public Garages)		35
Toilet Rooms	39	35
(Toilet Rooms Required)		35
(Toilet Rooms in Existing Buildings)		37

Topic	Sec. No.	Page
(Toilet Rooms for Two Sexes)		37
(Sex Designated)		37
(Location, Light, Ventilation)		37
(Floor)		39
(Walls and Ceilings)		39
(Partitions Between Fixtures)		39
(Recommendations)		39
(Fixtures)		39
(Protection from Frost)		40
(Where no Sewer System is Available)		40
(All Toilets, Cleanliness)		40
(Service Closet)		40
Ventilation of Courts	29	28
Windows and Courts		27
(Windows)		27
(Courts)		27

PART IV STRUCTURAL DESIGN

Concrete Construction	45	51
(Unit Stresses and Reinforcement)		51
(Reinforced Concrete Columns)		52
(Steel and Cast Iron Columns Encased in Concrete)		53
(Protection of Reinforcing Steel)		54
(Standard Practice)		54
(Materials and Supervision)		54
(Concrete Walls)		54
Diagram Showing Structural Design		43
(Cross Sectional View of Dwelling)		43
(Foundations)		45
Floor and Roof Loads	41	41
Foundations (Size for Dwellings)	43	44
Masonry Construction	44	44
(Unit Stresses)		46
(Mortar)		46
(Masonry Bearing Walls)		46
(Curtain Panel Walls)		47
(Stone Walls)		47
(Stone or Terra Cotta Facing)		49
(Double Masonry Walls)		49
(Hollow Clay Tile)		49
(Concrete Block and Tile)		49
(Parapet Walls)		50
(Recesses)		50
(Old Walls)		50
Steel and Iron Construction	46	55
(Stud Partitions)		57
(Furring for Walls)		57
(Floor and Roof Beams)		57
Wind Pressure	42	42

PART V. FACTORIES, OFFICES AND MERCANTILE BUILDINGS

Classification	48	59
Elevator Enclosures	51	62
Exits	49	59
(Number and Location)		59
(Type of Exits)		59
(Type of Buildings)		60
(Enclosure of Stairways)		60
(Exceptions)		60
(Total Width)		60
(Example)		61
(Capacity of Building)		61
(Exit Doors)		62
(Passageways)		62
Fire Alarms	56	64
Lighting	53	63
Notice of Loads and Persons Accommodated	57	64
(Floor Loads)		64
(Number of Persons)		65
Scuttle	50	62
Standpipes, Fire Extinguishers, Sprinklers	53	64
(Automatic Sprinklers)		64
Toilet Rooms, Lavatories and Dressing Rooms	54	63
(Number of Closets and Urinals)		63
(Toilet Room Lavatories)		63
(Shop Lavatories)		63
(Drinking Water)		64
(Dressing Rooms)		64
Trap Doors and Floor Openings	52	63

PART VI. THEATRES AND ASSEMBLY HALLS

Aisles and Passageways	65	70
(Width of Aisles)		70
(Passageways and Foyers)		70
(Inclines and Aisled Steps)		71
(Obstruction)		71
Boiler and Furnace Rooms	69	73

29 Nov 29 Ackelpohl

8 Feb 29 dir. g. 1924 cont.

Topic	Sec. No.	Page
Buildings Used for Other Purposes	61	68
Capacity	62	68
Classification	58	65
(Theatres)		65
(Assembly Halls)		65
Dressing Rooms, Property Rooms, Etc.	68	73
Elevator Enclosures	66	71
Exposure and Courts	60	67
Exits	63	68
(Type of Exits)		69
(Stairways)		69
(Fire Escapes)		69
(Exit Doors)		69
(Width of Exits)		69
Fire Protection	73	75
(Standpipes)		75
(Fire Extinguishers)		75
(Automatic Sprinklers)		75
(Fire Alarms)		75
Heating and Ventilating	70	73
Height and Class of Construction	58	65
(Theatres)		65
(Balconies and Galleries)		65
(Assembly Halls)		65
Mirrors—False Openings	74	75
Motion Picture Machine Booths	75	75
(Construction of Booth)		76
(Door)		76
(Openings)		76
(Ventilation)		76
(Electric Wiring)		77
(Machine)		77
(Films, Etc.)		77
(Temporary Booths)		77
Oil and Gas	71	73
(Exit Lights)		74
1.—Theatres		74
2.—Assembly Halls		74
Seats	64	70
Stage	67	71
(When Required)		71
(Proscenium Wall)		71
(Fire Proof Curtain)		71
(Automatic Ventilation)		72
(Stage Vestibule)		73
(Footlight Trough)		73
(Fireproof Paint)		73
Toilet Rooms	72	74

PART VII. SCHOOL BUILDINGS, LIBRARIES, MUSEUMS

Assembly Halls	82	81
Boiler and Furnace Rooms	84	82
Classification	76	77
Exits	79	78
(Number, Location and Type)		78
(Total Width)		79
(Exit Doors)		79
(Passageways)		79
Exposure and Courts	78	78
Fire Alarms	89	84
Height and Class of Construction	77	77
(Maximum Height)		77
(Class of Construction)		78
(First Floor Fireproof)		78
(Subdivisions and Firestops)		78
Lighting	87	84
Rooms, Windows and Lights	81	80
(Window Shades)		81
(Basement Rooms)		81
Scuttle	80	80
Standpipes and Fire Extinguishers	88	84
Seats, Desks and Aisles	83	82
Toilet Rooms	85	82
Ventilation	86	83

PART VIII. DWELLINGS, APARTMENT HOUSES AND PLACES OF DETENTION

Classification	90	84
(Hotels and Places of Detention)		85
(Minimum Size for Residence)		85
(Foundation for Dwellings)		85
Cleanliness	104	90
Courts and Shafts	93	86
Directions for Escapes	106	90
Exits	94	87
(Number, Location, Type)		87
(Stairways)		87
(Exit Doors)		88

Topic	Sec. No.	Page
(Passageways)		88
Fire Alarm	105	90
Height and Class of Construction	91	85
(Fireproof Construction)		85
(Non-Fireproof Construction)		85
(First Floor Used for Business Purposes)		85
(Corridor and Dividing Partitions)		85
Laundries, Boiler and Furnace Rooms	98	89
Lights	95	88
Rooms and Windows	97	88
(Size and Height of Rooms)		88
(Basement Rooms)		88
(Windows)		89
Repairs	102	89
Scuttle	96	88
Special Regulations for Dwelling Houses	107	90
(Monolithic Concrete Dwellings)		91
(Unit Construction)		91
(Concrete Structural Dwellings)		91
(Height of Exterior Walls)		91
(Floors, Floor Beams and Columns)		91
Standpipe and Fire Extinguishers	104	90
Toilet Rooms	100	89
Ventilation	99	89
Water Supply	101	89
Yards	92	86

PART IX ENFORCEMENT, PENALTY, VALIDITY

Conflicting Ordinances Repealed	110	92
Date of Effect	111	92
Enforcement of Ordinance	108	92
Validity of Ordinance	109	92

Index to Zoning Ordinance

Area Regulations	3	102
1.—Area Districts		102
2.—“A” Area Districts		102
(a) Building Area		102
(b) Number of Families Housed		102
(c) Rear Yards		102
(d) Side Yards		104
(e) Inner Courts		104
(f) Outer Courts		104
3.—“B” Area Districts		104
(a) Building Area		104
(b) Number of Families Housed		104
(c) Rear Yards		104
(d) Side Yards		104
(e) Inner Courts		104
(f) Outer Courts		105
4.—“C” Area Districts		105
(a) Building Area		105
(b) Number of Families Housed		105
(c) Rear Yards		105
(d) Side Yards		105
(e) Outer Courts		105
(f) Inner Courts		105
5.—“D” Area Districts		105
(a) Building Area		106
(b) Rear Yards		106
(c) Side Yards		106
(d) Inner Courts		106
(e) Outer Courts		106
6.—Building Line Set Back		106
7.—Area Districts Exceptions and Regulations		107
Boundaries of Districts	5	111
Board of Appeals	9	111
(Creation of Membership)		111
(Meetings)		111
(Duties)		111
(Powers)		112
Changes and Amendments	10	113
Completion of Building—Existing Buildings	11	113
Definitions	1	93-97
Height Regulations	4	108
Height Districts		108
1.—“A” Height District		108
2.—“B” Height District		108
3.—“C” Height District		108
4.—“D” Height District		109
5.—Height District Exceptions		109
Interpretation Purposes	8	110
Occupancy Permits	7	110
Plats	6	110
Regulations	2	97
(Use Districts)		97
(“A” Residence Districts)		97
(“B” Residence Districts)		97

Topic	Sec. No.	Page
("C" Residence Districts)		98
(Local Business Districts)		98
(General Business Districts)		99
(First Industrial District)		100
(Second Industrial District)		101
(Non-Conforming Uses)		101
Validity of Ordinance	13	114
Violation, Penalty, Enforcement	12	114
When Effective	14	114

Index to Plumbing Ordinance

Bends, Hubs, Increases, Offsets, Etc.	38	123
Board of Examiners Created	2	115
Branches—How Made	77	129
Branches—Angle of	58	126
Branch Vent Pipes—How Connected	59	126
Brass Caps for Cleanouts—Weight and Size	49	124
Brass Ferrules—Quality, Weight and Size	47	124
Cast Iron Pipes and Fittings—Coated	42	123
Catch Basin in Building Prohibited	96	131
Certificate Necessary—Listing Same	4	117
Cisterns	83	129
Cleanout Connections	21-79	120-129
Connecting Pipes to Steam Boilers with Water	98	131
Connections for Water Closets	36	123
(a) Other Fixtures	37	123
Change in Work—Permit Corrected	7	118
Defective Work to be Made Good	9-55	118-126
Discharge from Fixture	66	127
Doing Work Without a Permit	6	118
Drinking Tanks	88	130
Drum Traps	67	127
Earthenware Traps	60-69	126-128
Excavation of Streets	11	119
Extension Above Roof	26	121
Ferrules	48	124
Fittings to Correspond with Pipe	43	124
Flat Valves	81	129
Galvanized Pipe	45	124
House Drain Pipes	17	120
(a) Sink and Laundry Waste Pipes	18	120
(b) Connection with Sewer	19	120
(c) Pipe Hooks Prohibited	20	120
(d) Arrangement	22	121
Increases, Size and Position, Offsets	90	130
Inside Leaders	90	130
Joints	44-46	124
Leaders	89-91-92	130
Lead Pipe	12-51-52-78	119-125-129
Lodging Houses	80	129
Materials—Quality	10	119
Meetings of Board, Examinations, Fees	3	115
Metallic Strainers	68	127
New Flow Pipes	71	128
Notice for Inspection	56	126
Open Flushing	97	131
Penalty for Violation	100	131
Permits	5-8	117-118
Pipe for Street Service	13	119
Privy Accommodations in Cellars	94	131
Revent Pipe—When Dispensed with	28	121
Safe and Refrigerator Waste Pipes	73	128
Safe Waste Pipes	74	128
(a) How Discharged	75	128
(b) How Trapped and Discharged	76	128
Screw Caps	50	125
Separate Traps for Every Fixture	64	127
Separate System in Each Building	41	123
Service Pipes	14	119
(a) Stop Cocks and Waste Cocks	15	119
(b) Stop Cocks in Street	16	120
Single Traps	65	127
Soil and Waste Pipes	25-30-34	121-122
Steam Engines or Heaters	93	131
Sub-soil Drains	24	121
Testing Plumbing System	53	125
Traps	70	128
Traps at Foot of Soil and Water Pipes Prohibited	39	123
Ventilation	63	127
Vent Pipes	61-62	127
Verticle Pipes	40	123
Water Closets	82-86-87-99	129-130-131
Water Closets in Yard	84-85	129-130
Water Tests	54	125
Waste Pipes	31	122
Wooden Wash Trays Prohibited	95	131
Work Subject to Approval	9	118
Sediment Pipes	72	128
Yards and Areas	23	121

Building Code of the City of Waukegan Lake County, Illinois

**Be It Ordained by the Mayor and City Commission of
the City of Waukegan, Lake County, Illinois, as Follows:**

PART I

Scope of Building Code

Section 1. This Ordinance to be Known and Cited as the Building Code

The following provisions shall constitute and be known as the Building Code, and may be cited as such, and provides for certain matters concerning the construction, equipment, alteration, repair, moving or removal of buildings or any structure whatsoever erected or to be erected in the City of Waukegan.

Section 2. Fire Limits

The following shall be and are hereby declared to be the fire limits: All the areas designated in the Zoning Ordinance of Waukegan and amendments thereto hereafter enacted as Local Business Districts and General Business Districts.

Section 3. New Buildings and Additions

This code shall apply to all new buildings and additions except those exempted in Section 7.

Section 4. Alterations

This code shall apply to all alterations which affect the structural strength, fire hazard, exits, lighting or sanitary condition of any building except those exempted in Section 7. This does not include ordinary repairs necessary for the maintenance of any building.

Section 5. Change of Use

This code shall apply to all buildings which are to be devoted to a new use for which the requirements of this code are in any way more stringent than the requirements covering the previous use of the building.

WAUKEGAN BUILDING CODE

Section 6. Existing Buildings

Every new installation, and every repair exceeding 50 per cent, of any

Toilet Room,

Boiler, furnace, or stove,

Chimney or smoke pipe,

Motion picture machine or booth, shall comply with the corresponding requirements of this code. Every new installation and every repair exceeding 25 percent of any roof covering shall comply with the corresponding requirements of this code. (See also section 4 and 5).

Section 7. Buildings Not Included

This code does not apply to the following buildings:

- (a) Temporary one-story buildings for use of builders.
- (b) Wooden fences not over 8 feet high.
- (c) Bay windows when covered with incombustible material.

Section 8. Permit Required

No wall, building or part thereof, or no enlargement or alteration made to an existing wall, structure or building, costing more than \$100.00 shall be built, until duplicate plans showing the details of the proposed work, accompanied by duplicate specifications covering material or materials to be used, have been submitted to and approved by the Building Commissioner, and a permit issued for the proposed construction or alteration. One set of the approved plans and specifications shall be retained by the Building Commissioner and the other set shall be kept at the building during its construction. No changes from the approved plans shall be made until revised plans and specifications have been submitted to and approved by the Building Commissioner.

Structures subject to the provisions of this ordinance hereafter erected without permit, and not in conformity with this ordinance, shall be removed.

No wood frame building shall be moved from without to within or from one place to another within the fire limits and no building of any type shall be moved until a permit has been obtained from the Building Commissioner; and no permit shall be issued for moving a building to a new location unless the application for the permit is accompanied by a letter from the Chief of the City Fire Department stating that the proposed new location would not seriously increase the fire hazard of surrounding buildings.

No building within the fire limits other than a fire proof building may be repaired to more than 50 per cent of its value, and no permit shall be issued for altering a building in the fire limits unless the application for permit is accompanied by a letter from the Commissioner of Public Health and Safety stating that the existing building is suitable for repairs or alterations.

WAUKEGAN BUILDING CODE

Section 9. Fees For Permits

The fees for building permits shall be as follows:

Five dollars for work costing over \$100.00 and not over \$2000.00.

For work costing more than \$2000.00 the fee shall be \$3.00 for each \$1,000.00 or fraction thereof.

For moving a building the fee for permit shall be \$25.00 regardless of value or size of building.

The fees for permits to tear up streets and sidewalks shall be as follows:

For macadam pavement, 20 cents per square yard, but the minimum charge shall be \$5.00.

For concrete, brick or asphalt pavement, 50 cents per square yd., but the minimum charge shall be \$5.00.

For sidewalks, 25 cents per square yd., but the minimum charge shall be \$5.00.

Any building permit under which no construction work is commenced within six months from and after the date of issuance thereof or under which the proposed construction has not been completed within two years of the date of issuance thereof, shall expire by limitation, and no construction, alteration or removal shall take place after such expiration. All fees paid on such permit shall be forfeited to the City of Waukegan. Upon payment of ten cents per month on each thousand dollars of cost on which the original permit was issued, but not less than one dollar per month in any case, a building permit may be once extended for a period not exceeding six months upon the approval of the Building Commissioner.

PART II

Definition and Standards

Section 10. Fireproof Construction

A building is of fireproof construction if all the walls, partitions, piers, columns, floors, ceilings, roof and stairs are built of incombustible material; and if all metallic structural members are protected by an incombustible fire resisting covering of low heat conductivity. Such covering shall consist of Portland cement concrete, brick gypsum terra cotta, or tile, laid in cement mortar, or other approved material and shall be properly reinforced, bonded, wired or otherwise secured in place. Protected as in Section 45. No wood lath or wood furring strips shall form the support for plastering surfaces. Page 4 for permissive use of wood floor surfacing.

The following building materials, systems, units and forms of construction, assembled and constructed as hereinafter required, shall be accepted as fireproof construction:

**We Will Finance Your Building With A
Prudential Mortgage Loan at 5½ %**

Phone 237 **T. J. Stahl & Co.** 226 Washington St.

REAL ESTATE, LOANS AND INSURANCE

Brick (clay or concrete)
Hollow brick (clay or concrete)
Plain or reinforced concrete
Precast reinforced concrete units
Hollow or solid concrete block
Plain or reinforced gypsum
Precast reinforced gypsum units
Hollow or solid gypsum block
Hollow terra-cotta tile (clay or shale)
Book tile (clay or shale)
Metal lath and portland cement plaster

The Building Commissioner shall have authority to approve the materials listed above and also other materials not listed above.

The trimmings and finished floor may be of wood, provided all spaces behind or below same are filled with incombustible material. Partitions entirely contained within a private apartment may be non-fireproof provided the partitions enclosing such apartment are fireproof.

A room or a portion of building is of fireproof construction if it complies with all the above requirements, and is separated from the rest of the building by means of fireproof walls, floors and ceiling, in which all openings are protected by means of fire doors or fixed standard fire windows.

Section. 11. Protected Construction

Steel Lumber Floor Panels. Floor panels will be considered of protected construction if built of approved metal (See Section 46) designed to resist all stresses independent of any protective covering, and protected on the upper and lower sides. Steel lumber joists shall not be spaced more than 24 inches center to center, well bridged with proper tension strips. The upper slab shall be reinforced concrete not less than 2 inches thick over all structural metal. Expanded metal or metal lath of proper weight and rigidity to span the joist spacing, well fastened to joists, may be used for reinforcement, but no metal less than 24 gauge shall be used. Lower side of joists and structural supports shall be protected by not less than 7/8 inch cement plaster on expanded metal or metal lath. The upper slab and plastered

ceiling shall create air spaces between the metal floor supports completely isolated from the open atmosphere.

Connections of metal joists to beams, girders and other bearings shall be in a manner approved by the Building Commissioner.

All columns supporting floor panels of protected construction shall be protected as in Section 10. The lower flanges of structural members other than metal joists shall be kept away one inch from ceiling plaster with metal furring. The metal of beams, girders and joists between the upper slab and plastered ceiling of floor construction need not be covered.

All steel lumber floor joists shall receive two protective coats of oil and lead or bituminous paint before being placed in position.

Metal lumber shall not be used in floor panels having less than three feet of well ventilated air space below or in floor panels over damp basements.

Steel Lumber Partitions. Partitions will be considered of protected construction if built of approved metal (see Section 46) designed to resist all stresses independent of any protective covering, and protected on both sides with metal lath and not less than $\frac{3}{4}$ inch of cement or gypsum plaster. The covering of metal lath and plaster shall create air spaces between the metal completely isolated from the open atmosphere.

Where steel lumber is used in bearing partitions approved connections must be made with proper top and bottom bearings.

All steel lumber shall receive two protective coats of oil and lead or bituminous paint before being placed in position.

Section 12. Mill Construction

A building is of mill construction if all walls are built of incombustible material, and if all wood girders and joists are at least $5\frac{1}{2}$ inches thick. No wood girder or joist shall measure less than 63 square inches and no wood posts less than 90 square inches in sectional area, except that $7\frac{1}{2} \times 7\frac{1}{2}$ (or larger) posts may be used in the top story only. All structural steel or iron (not including post caps, bases, and joists hangers) shall be fire-proofed with not less than one inch of incombustible material or with metal lath and cement or gypsum plaster. The lower thickness of each floor shall be not less than $2\frac{5}{8}$ inch lumber with grooves and splines at the joints; this shall be covered with felt or building paper, and with a separate finished floor not less than $13/16$ inch thick.

Note: Floor joists shall be at least $7\frac{1}{2}$ inches thick. The roof shall be at least $2\frac{1}{2}$ inches thick and shall have an incombustible roof covering; if an airtight roof covering (such as felt or tin) is not used, then the roof planking shall be in two thicknesses, with felt or building paper between.

WAUKEGAN BUILDING CODE

There shall be no openings in the floor unless protected by standard fire doors, and no concealed air spaces except such as are enclosed by incombustible material.

All stairways and elevators shall be enclosed with standard fireproof enclosures.

Section 13. Ordinary Construction

A building is of ordinary construction if all enclosing walls consist of incombustible material, and the roof has an incombustible covering, but other requirements for fire proof or mill construction are not complied with. No joists, rafter, or stud shall be less than 2 inches thick. In buildings of more than one story, floor and roof joists shall not be supported by combustible stud partitions, but shall be supported by incombustible walls or partitions, or by semi-fireproof partitions (Section 19) or by columns and girders. If a bearing partition is supported by a steel girder, the portion of such girder which projects below the ceiling shall be covered with metal lath and plaster or other approved fire-proofing.

Section 14. Frame Buildings

A frame building is a building whose structural parts and enclosing walls consist of wood. If such enclosing walls are veneered, encased or faced with stone, brick, tile, concrete, plaster or metal whose stability or rigidity depends upon the frame wall, the building is also termed a frame building.

Section 15. Height of a Building

The height of a building is measured at the center line of its principal front, from the street grade (or if setting back from the street from the grade of the ground adjoining the building) to the highest part of the roof, if a flat roof, or to a point $\frac{1}{2}$ the height of the roof, if a gabled or hipped roof. If the grade of the lot or adjoining street in the rear or alongside of the building falls below the grade at the front, the height shall be measured at the center of the lowest side.

Section 16. Basement; First Floor; Number of Stories

A basement is a story whose floorline is below the grade at the main entrance and whose ceiling is not more than nine feet above such grade. The first floor is the floor next above the basement, or the lowest floor if there is no basement. The number of stories of a building includes all stories except the basement.

Section 17. Incombustible Roof Covering

A roof covering is considered incombustible if made of three thicknesses of roofing felt with tar and gravel, or if made of tin, corrugated iron, galvanized iron, or other approved fire resisting material.

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Section 18. Street, Alley, Court

A street is any public thoroughfare more than twenty feet in width. An alley is any public thoroughfare less than twenty feet but not less than ten feet in width. Any space less than ten feet wide is a court.

Section 19. Standard Fire Stops

Standard Fire Wall. A standard fire wall shall be built of brick or plain concrete or of solid or hollow concrete block not less than twelve inches in solid thickness, or of reinforced concrete not less than six inches thick. The material used must meet the requirements specified for that material either in Section 44 or Section 45. Every standard fire wall shall extend either from the foundation or from a fireproof floor, to a fireproof ceiling; or if the roof is not fireproof, such wall shall extend at least three feet above the highest adjoining roof line of the same building and shall be capped with stone, tile, concrete or other indestructible material. Every opening in a standard fire wall shall be closed with a standard fire door or a fixed standard fire window.

Standard Fireproof Enclosure or Partition. A standard fireproof enclosure or partition shall be made either of wire glass in metal frame, or of solid portland cement plaster not less than two inches thick on metal lath and metal frame (all metal of lath and frame to be well covered), or of reinforced concrete not less than three inches thick, or of plain concrete, brick, block or tile not less than four inches thick. The thickness must in all cases be sufficient to give rigidity. A standard fireproof enclosure or partition must rest on a masonry foundation or a fireproof floor; and must extend to a fireproof or semi-fireproof roof or ceiling. The wire glass in a fireproof enclosure or partition shall conform to the requirements for standard fire windows and the doors shall be standard fire doors; except that the doors may contain wire glass as specified for standard fire windows.

Standard Fire Door. A standard fire door shall consist of a wooden core encased with tin, or shall be entirely of metal; and shall be of design approved by the National Board of Fire Underwriters. The door frame shall be metal. The door shall close automatically in case of fire.

Standard Fire Window. A standard fire window shall have a metal frame, metal sash, and wire glass of design approved by the National Board of Fire Underwriters. No pane shall be less than $\frac{1}{4}$ inch thick nor of greater area than 720 square inches. The window either shall be fixed or shall close automatically in case of fire.

Semi-Fireproof Partitions. A semi-fireproof partition shall be constructed of not less than $1\frac{5}{8} \times 3\frac{5}{8}$ inch studding spaced not more than 16 inches center to center, with $3\frac{5}{8}$ inch dimension

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at right angles with the plane of the wall, and having the following protection on both sides of the partition.

(1) Metal lath and at least $\frac{3}{4}$ inch of portland cement or gypsum plaster, or gauged plaster containing one-half part lime, one-half part (or more) portland cement, and not over four parts sand; or

(2) Good quality plaster board at least $\frac{1}{2}$ inch thick, covered with sheet metal; or

(3) $\frac{1}{4}$ inch asbestos board, covered with at least $\frac{1}{2}$ inch portland cement or gypsum plaster, or with sheet metal; or two layers of $\frac{1}{4}$ inch asbestos board, breaking joints; or

(4) The spaces between studding may be filled with approved incombustible material, the partitions being plastered with portland cement or gypsum plaster on metal lath; or

(5) Other equivalent approved fire resisting construction. Below every hollow semi-fireproof partition, whether bearing or non-bearing, the spaces between floor joists shall be fire stopped with incombustible material extending the full height of the joists and the full thickness of the partition.

Every doorway in a semi-fireproof partition shall be protected with a standard fire door or with a self closing wooden door at least $\frac{7}{8}$ inch thick in its thinnest part. The glass in such partitions and doors shall be wire glass.

Semi-Fireproof Ceiling. A semi-fireproof ceiling shall be constructed of not less than $1\frac{5}{8}$ inch joists, spaced not more than 16 inches center to center, protected on the under side of the same as specified for a semi-fireproof partition; but gypsum plaster shall not be used for basement ceilings. The spaces between the joists shall be fire stopped, at intervals not greater than 25 feet, with incombustible material extending the full height of the joists.

Combustible Partitions or Ceilings. Every partition, ceiling or wall which is not fireproof, or semi-fireproof is considered combustible.

Section 20. Stairways and Exits

Exits may be classified as follows:

(1) Stair Exits:

Exterior enclosed stairway, or smoke proof tower.

Interior enclosed stairway.

(2) Horizontal Exits.

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The foregoing types of exits are now generally agreed to be the most efficient. Enclosed stair shafts and fireproof divided partitions prevent the spread of fire and protect both life and property. The exterior enclosed stairway, or smoke proof tower, is the safest possible form of stair exit and also furnishes a protected position from which firemen can attack a fire on any floor.

The following types of exits have a limited value and are permitted under certain conditions:

(3) Open or unenclosed stairways:

Interior.

Exterior.

(4) Fire Escapes:

"A" Fire Escapes.

"B" Fire Escapes.

Unenclosed stairways and outside fire escapes are not reliable for protection of life, except in low buildings, and are no protection for property.

To secure the best possible fire protection in a building accommodating a considerable number of persons, the building should be divided by a fireproof wall or partition, the two sections being connected by horizontal exits through or around the dividing wall, and each section being provided with one or more enclosed stairways; one stairway should be an exterior enclosed stairway, if possible. In case of fire in one section of such a building, the occupants can escape by the horizontal exits to the other section, and thence leave the building by means of the stairways, without panic. The same protection can be obtained in the case of two adjoining buildings, by connecting the two buildings with horizontal exits, each building being provided with one or more enclosed stairway. Where only a moderate number of persons are accommodated, the dividing partition is not so essential, but the stairways should be enclosed.

Fire drills are of great value in lessening the danger of panic and loss of life.

(For the number, size, type and location of exits in buildings of various classes, see sections on exits in Parts V to VIII.)

Exterior Enclosed Stairway. (Smoke Proof Tower). An exterior enclosed stairway shall be an enclosed stairway which is entirely cut off from the building and which is reached by means of open balconies or platforms. The entire stair enclosure, stairway balconies and balcony railings shall be made of incombustible material throughout. The wall separating the stairway from the building shall not be pierced by any door, window, or other opening. In a fireproof building this wall shall be built as prescribed for a standard fireproof enclosure (Section 19,) but without glass; in a non-fireproof building, this wall shall be built as prescribed for an outside wall (Section

44). The doors leading from the buildings to the balconies and from the balconies to the stairway shall be standard fire doors, and all openings within ten feet of any balcony shall be protected with standard fire windows or standard fire doors. Each balcony shall be covered at the top and shall be open on at least one side, with a railing on all open sides not less than three feet high.

Interior Enclosed Stairway. An interior enclosed stairway shall be completely enclosed with a standard fireproof enclosure (Section 19); except that in buildings of not more than two stories, such stairways may be enclosed with semi-fireproof partitions. (Section 19). In theatres and assembly halls, the door at the top of the stairway may be omitted.

The enclosure shall include at each floor level a portion of such floor which shall be at least as wide as the stairway; and such enclosure shall also include the passageway (if any) leading from the stairway to an outside door; so as to afford uninterrupted passage from the uppermost floor to such outside door, without leaving the enclosure. If windows are placed in such enclosure (excepting in the outside wall), such windows shall be fixed.

All Stair Exits: Width. Every required stairway whether enclosed or not, shall be at least three feet eight inches wide, of which not more than four inches on each side may be occupied by a handrail. Every platform shall be at least as wide as the stairway, measuring at right angles to the direction of travel. Every straight run platform shall measure at least four feet in the direction of travel. Wherever a door opens onto a stairway, a platform shall be provided extending the full width of the door.

The width of any stairway shall be the clear distance between walls or stringers, of which not more than four inches on each side may be occupied by a handrail.

If other stairways are provided in addition to those required by this code, such additional stairways need not conform to this paragraph.

All Stair Exits: Handrails. All stairways and steps of more than three risers shall have at least one handrail. Stairways and steps five feet or more in width, or open on both sides, shall have a handrail on each side. Stairways which are required to be more than eight feet wide shall be divided by center rails into widths not more than eight feet nor less than three feet eight inches. Center rails shall have upper newel posts at least five feet six inches high, or rails may be turned down to the floor in a manner to prevent hindrance. Rails shall be not less than two feet six inches vertically above nose of treads or three feet above platform.

(For theatres and assembly halls see also Section 63).

All Stair Exits: Risers and Treads. All stairways and steps used by the public or by more than twenty persons, shall have a uniform rise of not more than $7\frac{3}{4}$ inches and a uniform tread of not less than $9\frac{1}{2}$ inches, measuring from tread to tread, and from riser to riser; no winders shall be used; there shall not be more than 18 risers between platforms or between floor and platform or not more than 22 risers from floor to floor with no platform; in stairs used by the public (theatres, public assembly halls, retail stores, schools, hotels, and similar buildings) there shall be not less than three risers between platform or between floor and platform. Stairways or steps not used by the public or by more than twenty persons shall have a uniform rise of not more than eight inches and a uniform tread of not less than nine inches; if winders are used, the tread shall be at least seven inches wide at a point one foot from the narrow end.

The edges of all treads, and the edges of stairway landings must be finished with a non-slippery surface.

(For theatres and assembly halls, see also Section 63).

Section 21. Horizontal Exits

A horizontal exit shall be either:

(1) An opening through a fireproof wall or partition (Section 19) which separates two buildings or two divisions of a building; every such opening shall be protected by a standard fire door on each side of the wall, and the door on one side shall be self-closing; the opening shall not exceed 48 square feet in area; or

(2) An exterior balcony or bridge which connects two buildings or two divisions of a building. Every such balcony or bridge, including its railings, its supporting brackets or beams, and the exits thereto, shall be constructed the same as specified for fire escapes (Section 22). The floor shall not have a slope of more than one foot in five. All doors and windows which open onto the balcony or bridge, or which are within ten feet of the same, shall be standard fire doors or standard fire windows; but if such doors and windows are in walls which are in the same plane, then this requirement shall apply only to those doors and windows which are within five feet of the dividing wall.

If a horizontal exit takes the place of an "A" standard fire escape, it shall be at least two feet six inches wide; if it takes the place of a "B" standard fire escape, it shall be at least three feet four inches wide.

The floor on each side of a horizontal exit shall contain at least three square feet of unobstructed floor space per person, for all persons accommodated on both sides of such exit; and shall contain at least one stairway.

(See also Section 23).

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Section 22. Fire Escapes

Location. Every fire escape shall be so located as to lead directly to a street, alley, or open court connected with a street.

Every fire escape shall be placed against a blank wall if possible. If such a location is not possible, then every wall opening which is less than ten feet distant from any riser of the fire escape shall be protected by a standard fire door or standard fire window, except in the top story, and excepting two story buildings other than theatres and assembly halls.

Exits to Fire Escapes. Every fire escape shall be accessible from a public passageway or shall be directly accessible from each occupied room. Exits to fire escapes shall be standard exit doors (Section 23) except that doors to "A" fire escapes may be not less than two feet six inches wide.

Material and Strength. No other material than wrought iron or soft or medium steel shall be used for any part of a fire escape, except for weights, separators, and ornaments. No bar material less than one-quarter inch thick shall be used in the construction of any fire escape, except for separators, ornaments, structural shapes over three inches and rigidly built up treads and platforms of approved design. All bolts and rivets, except for ornamental work, shall be not less than $\frac{3}{8}$ inch in diameter.

Each part of every fire escape (except counter-weights for balanced stairways) shall be designed and constructed to carry a live load of 100 pounds per square foot of horizontal area over the entire fire escape. Each part of every fire escape shall be designed and constructed in accordance with the requirements on Structural Design (Section 46) except that the unit stresses therein specified shall be reduced by one-fourth. The minimum sections and sizes specified below shall be increased whenever necessary so that under full load the allowable unit stresses will not be exceeded.

Platforms. Each platform of an "A" fire escape shall be at least 28 inches wide; each platform of a "B" fire escape shall be at least three feet four inches wide. Such widths shall be the clear distance between stringers, measured at the narrowest point. Each platform shall extend at least four inches beyond the jambs of exit openings. The above minimum widths and lengths shall be increased, wherever necessary, so that no exit

door or window will when open, block any part of the required width of the fire escape.

Every platform shall consist of either:

(1) Flat bars on edge not less than $1 \times \frac{1}{4}$ inch; but not less than $1 \frac{1}{4} \times \frac{1}{4}$ inch where bolts and separators are used; bars shall not be more than $1 \frac{1}{4}$ inches center to center.

(2) $\frac{1}{2}$ inch or $\frac{5}{8}$ inch square bars with sharp edge up, not more than $1 \frac{1}{2}$ inches center to center.

(3) $\frac{5}{8}$ inch round bars, not more than $1 \frac{1}{2}$ inches center to center.

Platform and treads may be solid if covered by a roof.

The platform frame shall consist of not less than $2 \times \frac{3}{8}$ inch flat bars on edge or equivalent, provided the brackets are not more than four feet apart. If brackets are more than four feet apart, the frame shall be correspondingly stronger and stiffer. Every platform wider than thirty inches, if made of square or round bars, shall have a third frame bar through the center; if made of flat bars, the platform shall have separators and bolts through the center. Frame bars shall not project more than $\frac{1}{4}$ inch above platform bars, except around the outside of platform.

There shall be a platform at each story above the first, and intermediate platforms if floors are more than sixteen feet apart vertically.

Platforms shall not be more than eight inches below the door sill.

Brackets. Brackets for a 28 inch or 30 inch platform, when spaced not more than four feet apart, shall be made of not less than $\frac{7}{8}$ inch square bars or $1 \frac{1}{2} \times 1 \frac{1}{2} \times \frac{1}{4}$ inch angles; such bars or angles shall be larger if the platform is wider or if the brackets are farther apart. Each bracket shall be fastened at the top, to the wall, by a through bolt (at least $\frac{7}{8}$ inch in diameter) nut, and washer (at least four inches in diameter). The slope of the lower bracket bar shall be not less than thirty degrees with the horizontal. The lower bar shall have a washer or shoulder to give sufficient bearing against the wall.

The strength of the wall to which brackets are to be attached shall be carefully considered in determining the spacing, shape, and inside connections of brackets, so that under full load the wall will not be unduly strained.

Stairways. Each stairway of an "A" fire escape shall be at least 24 inches wide between stringers; such stairway shall have a uniform rise of not more than eight inches, and a uniform run of not less than eight inches.

Each stairway of a "B" fire escape shall be at least three feet four inches wide between stringers; such stairway shall have a uniform rise of not more than eight inches, and a uniform run of not less than nine inches.

Stairway stringers shall consist of either:

- (1) A 5 inch channel or larger.
- (2) Two angles $2\text{x}2\text{x}\frac{1}{4}$ inch or larger.
- (3) Two flat bars $2\text{x}\frac{3}{8}$ inch or larger.
- (4) One flat bar $6\text{x}\frac{1}{4}$ inch or larger.

If two angles or two flat bars are used, they shall be properly tied together by lattice bars, vertical as well as horizontal. If flat bars are used, every stairway of more than ten risers shall have lateral bracing. The connection of stringers to platform at top and bottom, shall be at least equal in strength to the stringers and shall safely carry the full live and dead loads. If stringers are carried by intermediate brackets, the stringers shall have a horizontal bearing on the brackets and shall be properly and securely connected thereto.

Treads shall consist of either flat or square bars (not round), of the size and spacing specified for platforms. An "A" tread shall consist of at least six square bars, or seven flat bars. A "B" tread shall consist of at least seven square bars, or eight flat bars. A "B" tread made of flat bars shall have separators and bolt through the center. A "B" tread made of square bars shall be trussed.

Treads and platforms may be solid if covered by a roof.

Balanced Stairway. All fire escapes on schools, theatres and assembly halls, shall reach to the ground. "A" fire escapes which are not on schools, theatres or assembly halls, may terminate in a platform at least three feet long, located not more than ten feet above the ground. All other fire escapes shall have a balanced stairway reaching to the ground.

Every balanced stairway shall conform to the requirements for other stairways except that the stringers and the top rail may be lighter if they are properly trussed. The counterbalancing device shall be attached to both sides of the stairway equally, or a special attachment shall be used to prevent warping or twisting. The counterbalancing device shall operate gradually and easily as the live load is applied. Cable counterweights are not permitted.

Treads for "A" balanced stairways may be made as follows: two $1\frac{1}{4}\text{x}1\frac{1}{4}\text{x}1\frac{1}{4}$ inch angles at front and back; two $1\frac{1}{4}\text{x}1\frac{1}{4}$ inch bars between, lying flat-wise; one inch space between bars. Treads for "B" balanced stairways may be made as follows: two $1\frac{1}{2}\text{x}1\frac{1}{2}\text{x}1\frac{1}{4}$ inch angles at front and back; two $1\frac{1}{2}\text{x}1\frac{1}{4}$ inch bars between, lying flatwise; one inch space between bars. All such treads shall be strongly fastened together with cross bars not more than 14 inches apart.

Railings. Railings shall be provided on all open sides of platforms and stairways, and on both sides of balanced stairways. Either a railing or a handrail fastened to wall shall be provided on each side of all "B" fire escape stairways. Railings shall be

at least three feet high, measuring vertically from floor of platform or from nose of step.

Every railing shall have posts, not more than five feet apart made of not less than $1\frac{1}{2} \times 1\frac{1}{2} \times \frac{1}{4}$ inch angles or tees, or $1\frac{1}{4}$ -inch pipe; top rail not less than $1\frac{1}{4} \times 1\frac{1}{4} \times \frac{1}{4}$ inch angle, or equivalent; center rail not less than $1\frac{1}{4} \times 5/16$ flat bar or equivalent. All connections shall be such as to make the railing stiff; two bolts ($\frac{3}{8}$ -inch or larger) shall be used at the foot of each post wherever possible, or at least one $\frac{1}{2}$ -inch bolt shall be used. Railings shall be continuous. No projections on the inside of the railing shall be permitted. Where a railing returns to the wall, it shall be fastened thereto with a through bolt (at least $\frac{5}{8}$ -inch in diameter), nut, and washer; or (in reinforced concrete) with an approved insert; or the railing shall be made equally secure with a diagonal brace extending at least three feet horizontally and three feet vertically.

All outside railings which are more than sixty feet above grade shall be at least six feet high, measuring vertically from floor of platform or from nose of step. Such railings shall be of special design approved by the Building Commissioner, having not less than four longitudinal rails, and vertical lattice bars not more than eight inches apart, and proper stiffening braces or brackets.

Ladder to Roof. Every fire escape which extends higher than the second floor shall be provided with a ladder leading from the upper platform to the roof, unless the fire escape stairway leads to the roof. The ladder shall have stringers not less than $1\frac{1}{4}$ inch pipe, or not less than $2 \times \frac{3}{8}$ -inch flat bars, at least 17 inches apart in the clear. The rungs shall be not less than $\frac{1}{2}$ -inch square or $\frac{5}{8}$ -inch round bars 14 inches center to center. The stringers shall be securely tied together at intervals no greater than every fifth rung. The top rung of each ladder shall be not less than four feet above the roof coping, and the ladder shall return within two feet of the roof if the coping is more than two feet above the roof.

Standpipe. A Standpipe shall be attached to every fire escape on every building of more than three stories not having an automatic sprinkler system; except that buildings requiring more than one fire escape on any side thereof, shall be provided with at least one standpipe on each side.

Every standpipe shall extend from a point within five feet of the ground to a point three feet above the roof or cornice, and shall be securely fastened to and accessible from each platform. The standpipe shall be made of not less than three inch wrought pipe, with $2\frac{1}{2}$ -inch outlet hose valve at each floor and at roof, and a double Siamese valve at the base of the pipe. All connections shall conform to the size and pattern used by the city fire

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department, and the entire standpipe shall conform to all requirements of such department.

Other Types of Fire Escapes. Sliding or chute fire escape may be used, upon the approval of the Building Commissioner in place of "A" or "B" fire escapes. Every sliding fire escape shall be provided with a ladder (constructed as described in this section, under the heading "Ladder to Roof") extending from five feet above grade to four feet above the roof coping.

Section 23. Standard Exit Doors

Every door which serves as a required exit from a public passageway or stairway, or which forms a horizontal exit, shall be a standard exit door. (See also Sections 49, 63, 79 and 94).

Every standard exit door shall swing outward or toward the natural means of egress, except as below and as in Sections 49 and 94. It shall be level with the floor, and shall be so hung that, when open, it will not block any part of the required width of any other doorway, passageway, stairway, or fire escape. No revolving door (unless collapsible) and no sliding door, except where it opens onto a stairway enclosure, or serves as a horizontal exit, shall be considered as a standard exit door.

A standard exit door shall have such fastenings or hardware that it can be opened from the inside without using a key, by pushing against a single bar or plate, or turning a single knob or handle; it shall not be locked, barred, or bolted at any time while the building is occupied.

A standard exit doorway shall be not less than six feet four inches high by three feet four inches wide, except where especially provided (Sections 79 and 94). No such doorway or group of doorways shall be more than six inches narrower than the required width of the stairway or passageway leading thereto.

In every building which is used at night, a red exit light shall be placed over every emergency exit door and also over every exit door where other doors or openings may cause confusion. (See also Sections 49, 71, and 95).

Section 24. Location and Maintenance of Exits

Every exit mentioned in Sections 20 and 23 shall lead to a street, alley or open court connected with a street. All such

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exits, and all passageways leading to and from the same, shall be kept in good repair and unobstructed at all times.

Section 25. Standpipes, Fire Extinguishers, and Sprinklers (For exterior standpipes See Section 22).

Interior Standpipes. (For the number and location of interior standpipes required in buildings of various classes, see the sections on standpipes in Part V to VIII).

Standpipes shall connect with city water mains or with an elevated tank of approved design and capacity, and shall be provided with hose and valve at each story, located not more than five feet above the floor.

The hose shall be not less than 1½ inches in diameter, and shall be kept connected, in good repair and working order, and ready for immediate use at all times.

The size of pipes and other details of installation, shall be as approved by the Building Commissioner.

An approved automatic sprinkler system will be accepted as a substitute for interior standpipes, except in theatres. (See Section 73).

Fire Extinguishers. Where chemical fire extinguishers are required, they shall be of the 2½ gallon soda acid type, or other type approved by the Building Commissioner. Soda-acid extinguishers shall be discharged and recharged at least once a year; others shall be charged as required.

Automatic Sprinklers. Where an automatic sprinkler system is required throughout the building (Sections 55 and 73) such system shall be supplied either from the city water mains or from a gravity or pressure tank. If city water supply of adequate volume and pressure is not available, a tank shall be provided.

Where automatic sprinklers are required in the basement only (Section 55), they shall be supplied from the city water mains.

Every basement sprinkler system shall also include sprinklers in all shafts (except elevator shafts) leading upward from the basement.

Every sprinkler system shall also have a suitable connection for the fire department. Where a complete sprinkler system is provided (whether required or not) exterior and interior standpipes may be omitted, except for interior standpipes in theatres. The number and location of sprinklers, size of pipe, size and location of tank (if any), and all other details of equipment, shall conform to the best standard practice.

PART III

General Requirements

Section 26. Design and Supervision of Buildings

Every building shall be designed by a competent architect, structural engineer, or builder, in accordance with this code; and shall be constructed under the supervision of a competent superintendent or inspector, in accordance with the plans and specifications of the designer. The designer may also act as superintendent. No material change from the original plans and specifications shall be made except with the knowledge and consent of the designer. No owner shall construct any building or permit any building to be constructed except in accordance with this section.

Unsafe or Unsanitary Buildings. Repair or Removal of Same. When any building, or part thereof, or any structure of like nature is in a condition dangerous, insecure, unsafe or unsanitary in the opinion of the Building Commissioner, he shall cause notice in writing to be given the owner, occupants, lessees or persons in possession, charge or control of such place or building to make such changes, alterations or repairs, as safety or the Ordinances of the City may require.

If, at the expiration of the time specified in such notice for the completion of work required to be done by the terms of such notice, in order to render the building or structure safe, said notice shall not have been complied with, and said building or structure is in such unsafe or unsanitary condition as to endanger life or property, or the health of the occupants or of the community or neighborhood, it shall be the duty of the Police of said City upon order to that effect from the City Commission to proceed forthwith to tear down such unsafe, or unsanitary condition, as aforesaid or to take such measures as may seem necessary to put such building or structure in a safe and sanitary condition.

An itemized account of the expenses of tearing down and removing such building or structure or of putting same in a safe and sanitary condition shall be presented to the owner or owners of such building or structure or his or their agents or to such lessee or occupants for payment and in case the owner or owners, lessee or occupants, as the case may be, shall fail or refuse, upon demand, to pay the same then the same may be recovered from such owner or owners, lessee or occupants, in an action of debt in the name of the City.

Section 27. Height and Class of Construction

Buildings of mill construction shall be not higher than 65 feet above the grade.

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Buildings of ordinary construction shall be not higher than 55 feet above the grade.

Frame or veneered buildings shall be not higher than 40 feet above the grade.

Roof appendages such as dormer windows, domes, towers, tanks, other than sprinkler tanks, turrets, spires, skylights, monitors, penthouses or other projections above the main roof of a building shall not exceed in total area 20 per cent of the main roof otherwise the building height limit shall apply to the roof of such appendage.

No appendage, except sprinkler tanks, on the roof of a building of mill construction shall exceed a height of 110 feet above the grade.

No appendage, except sprinkler tanks, on the roof of a building of ordinary construction shall exceed a height of 80 feet above the grade.

No appendage, except sprinkler tanks, on the roof of any frame or veneered building shall exceed a height of 50 feet above the grade; the walls and roof of all such appendages shall be covered with incombustible material.

A spire which does not exceed in total area 20 percent of the main roof will be excepted from the above limitations of height provided the following requirements are met with:

(1) The spire must be supported by masonry or plain concrete or reinforced concrete foundations and walls designed to support it independently of the rest of the building.

(2) The supporting wall of the spire must extend at least as high as the ridge of the roof of the main building.

(3) The spire must be protected against lightning.

In every building more than four stories in height, all outside doors and windows shall be standard fire doors and standard fire windows, if they are less than 20 feet away from any adjoining lot line or from the center of an adjoining alley, or if they are less than 40 feet away from any other building; but this shall not apply to walls, windows and doors which lie in the same parallel planes facing in the same direction.

Any portion of a building which is of inferior type of construction or which is exposed to special fire hazard, shall be isolated by means of standard fire walls or fireproof enclosure, or partitions, and fire-resisting ceilings, floors and doors, or as directed by the Building Commissioner.

Section 28. Floor Areas.

The maximum undivided floor area in any building shall be as follows:

Fireproof construction 16,000 square feet.

Mill construction 8,000 square feet.

Ordinary construction 6,500 square feet.

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Frame buildings 4,000 square feet.

The areas in the foregoing table may be increased as follows:

In one-story and two-story buildings, by 50 per cent.

In buildings equipped with an approved automatic sprinkler system, by 66 2/3 per cent.

In buildings fronting on at least three streets, or two streets and an alley, by 20 per cent.

Every such increase shall be computed on the original maximum area. The increases are cumulative. Where both the building and its contents are practically incombustible such area may be increased if approved in writing by the Building Commissioner.

Where a dividing wall is required in any building such wall shall be of solid incombustible fire resisting material of the same thickness as required for enclosing walls; and shall be continuous from the foundation to the roof, in a fireproof building, or to three feet above the roof in a non-fireproof building. Each opening in a division wall shall have a standard fire door on each side of the wall.

Section 29. Windows and Courts

Windows. Every room in which one or more persons live, sleep, or are employed (except storage rooms or other rooms where the nature of the occupancy will not permit), shall be lighted by a window or windows opening directly upon a street or alley or upon a court on the same lot with the building. The windows shall be so constructed and distributed as to afford proper light and ventilation. Every building more than 40 feet deep (measuring at right angles to the windows) shall have windows on at least two sides.

Definitions of Courts. By "inner court" is meant an open air shaft or court surrounded on all sides by walls.

By "inner lot line court" is meant a court bounded on one side and both ends by walls and on the remaining side by a lot line.

By "outer court" is meant a court extending to a street, alley, or open space not less than 15 feet wide.

By "outer lot line court" is meant a court with one side on a lot line and opening to a street or open space not less than 15 feet wide.

In applying the following requirements, a building from 30 to 43 feet high shall be considered as having at least three

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stories, and each additional 13 feet shall be considered an additional story.

Size of Courts. No outer lot line court, measured from the lot line to the wall of the building, shall be less than 3 feet wide for a court two stories or less in height and 40 feet or less in length. For each additional story in height, the width of such court shall be increased one foot; and for each additional 15 feet or fraction thereof in length, the width of such court shall be further increased one foot.

No outer court between wings or parts of the same building, or between different buildings on the same lot, shall be less than 6 feet wide for a court two stories or less in height and 40 feet or less in length. For each additional story in height, the width of such court shall be increased one foot; and for each additional 10 feet or fraction thereof in length, the width of such court shall be further increased one foot.

In the case of an outer court or an outer lot line court which is open at each end to a street or open space not less than 15 feet wide, the above lengths may be doubled.

No inner lot line court shall be less than 6 feet in width, or less than 60 square feet in area, for courts two stories or less in height, except that an inner lot line court one story high shall be not less than 4 feet wide and not less than 40 square feet in area; and for every additional story every such inner lot line court shall be increased by at least one linear foot in its length and one linear foot in its width.

No inner court shall be less than 10 feet in width nor less than 150 square feet in area for courts two stories or less in height; and for every additional story every such inner court shall be increased by at least one linear foot in its length and one linear foot in its width.

No court shall be covered by a roof or skylight but the entire required area shall be open and unobstructed from the bottom thereof to the sky. No fire escape or stairway shall be constructed in any court unless the court be enlarged proportionately.

All walls of inner courts whose least horizontal dimension is less than one-fourth the height, shall be faced with material with a permanent white surface or shall be painted white at least every two years.

No buildings shall be altered or enlarged to encroach upon space reserved under this code for light and air on the lots or parcels of ground on which such building is erected.

Ventilation of Courts. At the bottom of every shaft or inner court there shall be sufficient access to such shaft or court to enable it to properly be cleaned out. Every inner court which is required under this section and which is more than one story in height shall have an intake for fresh air, leading from the

street or other open space. The area of such intake in square feet shall equal at least two one-thousandths of the number of cubic feet contained in said court; but such area need not be more than 50 square feet. Every intake shall be constructed of fireproof material and unless said intake is used as a passageway for persons, there shall be no openings into the same other than the inlet and outlet.

Section 30. Boilers, Furnaces and Stoves

Fireproof Room. Every boiler operating with more than 15 pounds steam pressure per square inch shall, together with furnace and breeching, be enclosed with a standard fireproof enclosure and fire-proof ceiling and floor, or be located in a separate building, or be separated from the remainder of the building by a division wall as described in Section 28.

Protection of Floor. Every boiler, furnace or oven shall be placed on a fireproof floor projecting at least two feet on all sides. Such floor shall also be provided for every coal, wood, or oil stove or range which is more than 16 feet square in horizontal area or which has a flame at the bottom. If any such floor rests on or is in contact with any combustible material, then the fireproof floor layer shall be at least 5 inches thick and shall be hollow, with air spaces running horizontally through the same. The air spaces shall be open at both ends and shall be so placed that air can circulate through them; the horizontal area shall equal at least one-half the horizontal area of the fireproof slab.

The air spaces may be secured by using hollow tile placed end to end; or by imbedding wrought or sheet iron pipes (2 inches in diameter, or larger) in a layer of concrete. The air spaces shall run parallel to the short dimension of the slab.

If the stove, range, etc., is raised at least 6 inches above the floor and such air space is not enclosed, then the fireproof floor layer may be reduced to not less than 2 inches of solid thickness, without air spaces, provided it is covered with sheet metal.

Every coal, wood, or oil stove or range not more than 16 square feet in horizontal area and not having a flame at the bottom shall, if placed on a combustible floor, be raised at least 6 inches above the floor, and such air space shall not be enclosed. Such floor shall be protected with a stove board of sheet metal or asbestos, projecting at least two feet on all sides.

Gas stoves shall be protected as above specified, except that,

(1) a three inch solid fireproof floor layer, projecting at least 6 inches on all sides, will be sufficient protection if the stove has a false bottom at least 3 inches above such fireproof floor; and

(2) if the stove is less than 16 square feet in horizontal area and has a false bottom at least 5 inches above the floor, no fireproof floor shall be required.

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Protection of Walls and Ceilings. No boiler, furnace, oven or range, whether encased or not, shall be placed less than 24 inches away from any non-fireproof wall partition or ceiling; except that such distance may be reduced to 12 inches if the wall, partition, or ceiling is protected with at least $\frac{1}{4}$ inch asbestos board covered with galvanized sheet metal, or with equivalent protection as specified in Section 19.

The above distances may be reduced one-half in the case of stoves and ranges less than 16 square feet in area, and also in the case of gas ranges of greater area if proper insulation is incorporated in the back of the range.

The top of every boiler, furnace or oven, shall be covered with asbestos, sand, or other heat resisting material, or the required distance above same shall be increased 100 per cent.

Section 31. Smoke Pipes

No smoke pipe shall pass through any floor, outside window or door nor through any combustible roof or combustible outside wall, nor through any closet, attic or similarly concealed space.

Every smoke pipe passing through a non-fireproof partition shall be encased with incombustible material at least four inches thick or with a double safety thimble made of two concentric rings of sheet metal with at least one inch open air space between and with the outer ring covered with at least $\frac{1}{4}$ -inch asbestos.

No part of any smokepipe shall be placed nearer to any non-fireproof partition or wall than the diameter of the pipe, nor nearer to any non-fireproof ceiling than one and one-half times the diameter; but the above distances may be reduced by one-half, if the wall or ceiling is covered with not less than $\frac{1}{4}$ -inch asbestos board covered with galvanized sheet metal, or with equivalent protection as specified in Section 19.

Section 32. Steam Pipes

No steam pipe shall be placed within one inch of any wood-work. Every steam pipe passing through a combustible floor, ceiling or partition, shall be protected by a metal tube one inch larger in diameter than the pipe, and shall be provided with a metal cap. All wooden boxes or casings enclosing steam pipes, or wooden covers to recess in walls in which steam pipes are placed, shall be lined with metal, and shall be separated therefrom by a one inch air space.

Section 33. Air Pipes and Registers

Hot Air Pipes. Every hot air pipe contained in or passing through a combustible partition or floor shall be placed inside another pipe arranged to maintain a $\frac{1}{2}$ -inch air space between the two pipes on all sides; or the pipe shall be securely covered

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with ¼-inch corrugated asbestos. The bend at the bottom of the vertical pipe shall be kept at least two inches from any wood-work.

Registers. All register boxes shall be of metal, and shall either be double or be covered with asbestos not less than ⅛-inch thick.

Hot Air and Ventilating Flues. Every vertical hot air and fresh air flue or group of flues in the school, theatre and hotel groups shall be enclosed with, or constructed of, incombustible material at least two inches thick, lined with metal or smoothly finished on the inside; except that frame buildings not more than two stories in height may have metal flues if protected as required in this Section. Horizontal ducts for hot air and fresh air, and all vent flues shall be constructed as required in this Section, or better.

Section 34. Chimneys and Stacks

Chimneys for high-pressure boilers, furnaces used in manufacture, or for other heating appliances where high temperatures are maintained, and all isolated chimneys, shall be designed and built in accordance with good engineering practice and so that the stress in every part thereof, due to temperature changes, wind pressure, and the weight of the chimney itself, shall not exceed the safe limits specified in this code for the material used.

All other chimneys forming a part of building construction and having smoke flues of 260 square inches or less shall have walls of brick (clay or concrete), reinforced concrete, stone, or any one of these and burned fire-clay tile flue lining and such flue lining shall be not less than three-fourths of an inch thick and shall extend from the lowest opening to the top of the chimney. If only one of the above materials is used, the chimney wall shall be not less than eight inches thick, except that it may be six inches thick if of reinforced concrete. If one of the above materials is used in combination with burned fire clay tile flue lining, it shall be not less than 3¾-inches thick. Provided, however, that such flues having walls at least three inches thick of continuous concrete or interlocking or rabbitted joint concrete sectional flues may be used without burned fire-clay tile flue lining of crushing strength of the concrete is at least equal to the strength specified in Section 45 for concrete used in reinforced concrete construction.

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Chimneys not governed by the first paragraph of this section, but forming a part of building construction and having smoke flues with areas greater than 260 square inches shall have walls four inches thicker than the thicknesses specified above for chimneys having smoke flues with areas of 260 square inches or less; provided however, that the material of which all chimneys are constructed shall be so proportioned that it will not be subjected to a stress greater than the maximum safe stress specified in this code for the material used.

Only portland cement mortar, as defined in Section 44, shall be used in chimneys built of masonry units.

No chimney shall rest upon a flooring of wood nor shall any wood be built within 2 inches of any chimney.

The foundation of every chimney, flue or stack shall be designed and built in conformity with the requirements for foundations of buildings.

In no case shall a chimney be corbeled out more than eight inches from a masonry wall, and in every such case the corbeling shall consist of at least five courses of masonry.

The top of every chimney shall be at least five feet above the top of the building of which it is a part, if the roof is flat, or at least two feet above the ridge if the roof is pitched.

Metallic Smoke Stacks. No metallic smoke stack shall pass through any non-fireproof floor, ceiling, or roof, unless encased or lined with brick, concrete or other fireproof material of the same character and thickness as prescribed for non-metallic chimneys; or in place thereof; where such metallic stack passes through the roof only, it shall be separated from the roof by a twelve inch air space.

Wind Pressure. Every stack shall be designed to withstand a wind pressure of at least thirty pounds per square foot. In circular stacks such pressure shall be assumed to act over not less than one-half of the diametrical area.

Assume a stack 70 feet high and 30 inches in diameter; guys attached 20 feet below top of stack; slope of guys, 30 degrees with the horizontal (that is, guys reach the ground about 85 feet from the stack). The guys should then be not less than one-half inch galvanized cables, or two sets of $\frac{3}{8}$ -inch cables could be used. Proper anchors must be provided which will develop the full strength of the cable.

It is very important the guys be so arranged that they will not become weakened by chafing. If the guys are fastened to an eyebolt it should be protected by a steel shield which will take the wear.

Section 35. Lights

Oil lamps shall not be used when gas or electricity is available, except in private apartment and dwelling.

Gas and oil lights shall be placed at least six feet above the floor level, at least six inches from any combustible partition or wall, and at least two feet (measured from top of flame) below any combustible ceiling unless properly protected by a metal shield with at least two inches of air space above. Swinging brackets shall be provided with a guard or stop so that the light cannot come nearer to the partition or wall than one foot. In aisles and public passageways, every such light shall be protected by an incombustible guard unless the light is at least six feet six inches above the floor.

Every gas supply main shall have a service cock outside of the building, so placed and maintained that it can be shut off at any time without entering the building.

Section 36. Electrical Work

All electrical work shall conform to the Current National Electrical Code, dated 1918, copies of which may be obtained from the National Board of Fire Underwriters, 76 William Street, New York, or from the U. S. Bureau of Standards, Washington, D. C.

All wiring for lighting and power purposes in schools, theatres, assembly halls, hotels, hospitals and public garages shall be placed in conduit; except that this requirement need not apply to wiring for lighting purposes in schools and assembly halls of frame construction.

(See also Section 75, motion picture booths).

Section 37. Special Hazards

Laundry Drying Rooms. Every laundry drying room shall be of fireproof construction, with all interior openings protected by standard fire doors.

No heating appliance burning fuel shall be used in any such room.

Dry-Cleaning Establishments. Every Dry-Cleaning establishment shall be of fireproof construction, and shall not be more than two stories in height. A building not more than one story in height shall be either a separate building, or a separate portion of a building, isolated by means of standard fire walls, all openings in which are protected by automatic standard fire doors where sills are not less than six inches above the floor.

A building more than one story in height shall be occupied exclusively by the dry-cleaning establishment.

The lowest floor of any building used for dry-cleaning shall be above grade and there shall be no basement or other open or air space below such floor line. All windows, doors or other openings within fifty feet of any other building shall be protected by standard fire doors or standard windows. Doors in outside walls shall have sills flush with floor level.

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An efficient ventilating system shall be provided for all wash rooms and drying rooms in every dry-cleaning establishment. Unless an exhaust system with fan in continuous operation is installed, a gravity ventilating system with vent openings at floor and ceiling must be provided.

Public Garages. A public garage is any building which accommodates more than two automobiles, motorcycles, tractors or other motor driven vehicles designed to use volatile inflammable liquid for fuel or power, except that buildings in which such new motor vehicles which do not contain oil volatile inflammable liquid or storage batteries are stored, need not be included in this classification.

All public garages shall be of fireproof construction if more than one story in height.

All floors of storage rooms, sales rooms, and repair shops in public garages shall be of fireproof construction.

Where public garages are built in connection with buildings used for other purposes they shall be separated therefrom by means of standard fire walls, and unpierced fireproof floors and ceilings.

All walls, or parts of walls of public garages nearer than five feet to any other building or boundary line between premises shall be unpierced; all walls, or parts of walls nearer than ten feet to any other building or boundary line between premises shall have all openings protected by means of standard fire windows and standard fire doors.

Parapet walls shall be provided as described in Section 44.

Section 38. Elevator Enclosures

Elevator enclosures shall be designed and built in accordance with Section 19, under paragraph entitled "Standard Fireproof Enclosure or Partition." Elevators shall have close fitting sliding fire doors.

Section 39. Toilet Rooms

Approval by an "authorized agent" means approval by a plumbing inspector acting under the direction of the Building Commissioner.

Toilet Rooms Required. Every place of employment and every public building hereafter constructed shall have adequate toilet rooms completely enclosed, and so arranged as to insure privacy; except that where no dust prevails in foundries, rolling mills, blast furnaces, tanneries, and other similar buildings, partitions enclosing toilets shall be at least seven feet high but need not be carried to the ceiling nor enclosed at the top, provided such ceiling is at least fifteen feet high, and provided such toilets are located in rooms which females are not allowed to enter.

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Toilet Rooms in Existing Buildings. Every existing building must be provided with toilet facilities equal to the facilities required by this Code for new buildings of a similar kind. Installations to meet these requirements must be completed and in operation within five years from the date of approval of this Code.

Toilet Rooms for the Two Sexes. Where the two sexes are accommodated, separate toilet rooms shall be provided, except—

- (1) In apartment houses and dwellings,
- (2) If approved in writing by the Building Commissioner or his authorized agents, in buildings accommodating not more than five persons of both sexes, provided the door of such toilet room is kept locked and the key is kept in a place accessible to all such persons. But whenever the number of such persons shall exceed five, separate toilet rooms shall be provided.

Entrances to toilet rooms for the two sexes shall be properly separated, by screens or otherwise, and shall, whenever possible, be at least twenty feet apart.

Sex Designated. Wherever women are employed or accommodated, each toilet room shall be distinctly marked with regard to the sex which uses it, and no person shall be allowed to use a toilet room assigned to the other sex, except as provided in this section, under the heading "Toilet Rooms for the Two Sexes."

Location, Light, Ventilation. Every toilet or bathroom shall be so located as to open to outside light and air, by windows and skylights opening directly upon a street, alley, court, or vent shaft, except as hereinafter provided. Every such vent shaft shall have a horizontal area of at least one square foot for each water-closet or urinal adjacent thereto, but the least dimension of such shaft, if one story high, shall not be less than three feet; if two stories high, not less than four feet; and one foot additional for each additional story.

The glass area for a toilet room containing one closet or urinal shall be at least four square feet, with two square feet additional for each additional closet or urinal.

In addition to the windows herein required, each toilet room which contains more than three fixtures (closets and urinals) shall have a vent flue of incombustible material, vertical or nearly so, running through the roof with a cap or hood of the siphon

WAUKEGAN BUILDING CODE

type, or its equivalent, and the vent shall be not less than the following sizes:

Four Fixtures	8 inch pipe
Four or Six Fixtures.....	10 inch pipe
Seven to Ten Fixtures.....	12 inch pipe

But if the windows or skylights cannot be opened, then vent pipes shall be provided as specified in Section 39.

No toilet room shall have a movable window or ventilator opening on any elevator shaft, or any court which contains windows of sleeping or living rooms above; except that a toilet room containing not more than two closets may have a movable window on such court, provided such room has a vent flue running above the roof.

Location Without Outside Windows. When Permitted. If a location with outside windows is impracticable, a different location will be permitted, as follows:

(1) For a toilet used by not more than three persons—without special permit.

(2) For a toilet in a new building, used by more than three persons—only with the written approval of the Building Commissioner or his authorized agent.

(3) For a new toilet in an existing building, used by more than three persons—only with the written approval of the Building Commissioner or his authorized agents.

Such approval shall be granted only when a location with outside windows is not reasonably possible.

Where a toilet room without outside windows is permitted, it shall have a fixed window or windows to an adjoining room, with glass area as provided above, arranged so as to furnish as much light as possible. Frosted or other translucent glass shall be used when necessary for privacy. In no case shall the floor be of wood. A vent flue of incombustible material shall be provided, vertical or nearly so, running through the roof, with a cap or hood of the siphon type, or its equivalent, and the vent shall be not less than the following sizes:

One fixture (closet or urinal).....	6 inch pipe
Two fixtures	8 inch pipe
Three fixtures	10 inch pipe
Four or five fixtures.....	12 inch pipe
Six or seven fixtures.....	14 inch pipe
Eight or ten fixtures.....	16 inch pipe

Artificial Light. Every toilet room except in a private apartment) shall be artificially lighted during the entire period that the building is occupied wherever and whenever adequate natural light is not available, so that all parts of the room are easily visible.

Size. Every toilet room shall have at least ten square feet of floor area, and at least 100 cubic feet of air space, for each water closet and each urinal.

WAUKEGAN BUILDING CODE

Floor. The floor and base of every toilet room shall be constructed of material (other than wood) which does not readily absorb moisture and which can be easily cleaned; except that wood floors may be used.

(1) In private apartments and dwelling houses.

(2) If approved in writing, by the Building Commissioner or his authorized agents, in existing buildings where there is an existing wood floor in good condition and where such toilet will be used by not more than five persons, provided further that such room must have an outside window or skylight.

Walls and Ceilings. The walls and ceilings of every toilet room shall be completely covered with smooth cement or gypsum plaster, glazed brick or tile, galvanized or enameled metal, or other smooth, non-absorbent material. Wood may be used if well covered with two coats of body paint and one coat of enamel paint or spar varnish. But wood shall not be used for partitions between toilet rooms, nor for partitions which separate a toilet room from any room used by the opposite sex. All such partitions shall be as nearly soundproof as possible.

Walls and partitions shall be of light color to increase illumination and facilitate cleaning.

In large rooms a hose connection and a floor drain should be provided.

Partitions Between Fixtures. Adjoining water closets shall be separated by partitions. Each individual urinal or urinal trough shall be provided with a partition at each end and at the back, to give privacy. Where individual urinals are arranged in batteries, a partition shall be placed at each end and at the back of the battery. A space of six to twelve inches shall be left between the floor and the bottom of each partition. The top of the partition shall be from 5½ to 6 feet above the floor. Doors, with the top 5½ feet above the floor, and the bottom six inches above the floor, shall be provided for all water-closet compartments. All partitions and doors shall be of material and finish required by Section 39 for wall and ceilings.

Water-closet compartments shall be not less than 30 inches in width, and shall be sufficiently deep to permit the door to swing past the fixture when opened. Doors must swing inward.

Recommendation: It is recommended that doors be equipped with spring or other device so that they will remain open when the compartment is vacant and will need to be latched to hold shut when the compartment is occupied.

Fixtures. Only individual water closets of porcelain or vitreous chinaware shall be used. Watercloset seats shall be of wood or other non-heat-absorbing material, and shall be finished with varnish or other substance so as to be impervious to water.

Urinals shall be made of material impervious to moisture,

WAUKEGAN BUILDING CODE

and of such design, material, and construction that they may be properly flushed and kept in a sanitary condition.

In all new installations in schools, theatres, hotels, office buildings, mercantile buildings, libraries and museums, or similar public buildings, only individual urinals shall be used. Such individual urinals shall be of porcelain or vitreous china, set into the floor, the floor graded toward the urinal, and shall be equipped with an effective automatic tank or valve or satisfactory foot operating flushing device.

Protection from Frost. All water closets and urinals and the pipes connecting therewith shall be properly protected against frost, either by a suitable insulating covering, or by providing and operating a suitable heating apparatus, or in some other approved manner; so that such water closets and urinals will be in proper condition for use at all times.

Where No Sewer System is Available. Each water-closet and urinal and each lavatory or slop sink located in a toilet room, shall be connected with a sewer system, where a sewer system is available. In locations where a sewer system is not available, or cannot be made available, the disposal of human waste must be accomplished by means of individual septic tanks, the design and installation to be approved by the Building Commissioner.

All Toilets, Cleanliness. Every toilet room and every part thereof, including walls, floors and ceiling, and all fixtures therein, must be kept clean, efficient, and in good repair. In each toilet room sufficient toilet paper must be provided, and it must be made of material which will not obstruct the fixtures in such toilet room.

Service Closet. Where practical, a service closet conforming with requirements for construction of toilet rooms shall be provided and supplied with mop, broom, bucket, soap, toilet paper, and toweling necessary for sanitary upkeep of toilet rooms.

Section 40. Protection For Window Cleaners

In all buildings and places of employment every window above the first story or where the top of the window is more than twenty feet from the ground, except windows which are cleaned from within, must be provided with an efficient safety device to protect the window cleaner. Such safety device must consist of:

(a) A safety belt must be provided for each window cleaner, which belt must be fastened at each end to a permanent attachment which must be bolted through the window frame and be secured by a nut and washer on the inside; or

(b) A substantial, movable platform which is projected through the window for the window cleaner to stand upon and which is provided with a substantial railing; or

(c) Other equally efficient device.

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PART IV Structural Design

Such details as are given in the following sections are typical not restrictive. The Building Commissioner will, on application, approve any other type of design which affords equal strength and security in accordance with standard practice.

Section 41. Floor and Roof Loads

The minimum stresses to be resisted by any structure shall be calculated by adding to the weight of the structure, called dead load, the following superimposed live loads uniformly distributed in pounds per square foot of horizontal area.

Theatres, Assembly Halls and Other Places of Assemblage:	
Auditoriums with fixed seats.....	70
Lobbies, passageways, stairways and auditoriums or places of assemblage without fixed seats.....	100
Dance halls	100
Theatre stage	150
School Buildings, Libraries and Museums:	
Class rooms and rooms for similar use.....	60
Corridors, laboratories and similar public parts of the building	80
Hotels, Dwellings, Apartment and Tenement Houses, Club Houses, Hospitals and places of Detention:	
Dwellings, first floor	40
Dwellings, floors above first.....	30
Private rooms and apartments (other than dwellings).....	50
Public corridors, offices, lobbies, dining rooms, etc.....	80
Office Buildings:	
First floor	100
Floors above first	60
Grand Stands	100
All Stairs	100
Workshops, factories and mercantile establishments.....	100

(In warehouses, workshops, factories and mercantile establishments used for the sale, storage or manufacture of heavy merchandise or machinery the floors shall be designed to carry all loads safely, including an allowance of at least 25 per cent for vibration where vibration occurs.)

Roofs	30
Sidewalks	225

(In any building where the maximum floor load is more than 225 lbs. per square foot the sidewalk must be designed to carry safety such maximum load.)

WAUKEGAN BUILDING CODE

Wind pressure, 25 lbs. per square foot of exposed surface, except as modified in Section 42.

The foregoing floor loads (but not the roof or sidewalk loads) may be decreased by 20 per cent in building of fireproof construction.

Concentrated, partial, and eccentric loading shall also be provided for.

The joists, beams, girders, columns, and walls supporting the roof shall be designed to carry the full loads.

(a) Table of Joists for Dwellings. Minimum Size and Spacing:

Span	First Floor	Second Floor
8'0" and not over 11'0"	2x 8—16" O/c	2x 8—16" O/c
11'1" and not over 16'0"	2x10—16" O/c	2x10—16" O/c

16'1" and over to be approved by the Building Commissioner.

The span, is the span of joists from center of bearings.

All floor joists carrying partitions must be doubled.

(b) Ceiling joists for dwellings.

Ceiling joists shall be not less than 2x6—16" O/c.

(c) Roof Rafters for Dwellings.

Roof rafters where length is 12'0" or over shall be at least 2x6 24" O/c. All shorter rafters shall be at least 2x4 16" O/c.

Floor girders and trusses over 30 feet long shall be designed to carry not less than 85 per cent of the live load besides the dead load; except that in hotels, apartment and tenement houses, hospitals, club houses, and office buildings they shall be designed to carry not less than 75 per cent of the live load besides the dead load.

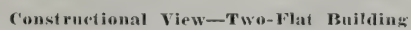
In a factory, store, warehouse or similar commercial building, the live load to be supported by walls, columns and foundations, shall be assumed at not less than 85 per cent of the full live load of the top floor, 80 per cent of the next lower floors and 75 per cent for each succeeding lower floor.

In all other buildings the live loads to be supported by walls, columns, and foundations, shall be assumed at not less than 85 per cent of the full live load of the top floor and 5 per cent less for each succeeding lower floor until a ratio of 50 per cent is reached, which shall be used for all succeeding lower floors.

No one shall do any cutting in, on any floor, ceiling or roof joists of any building.

Section 42. Wind Pressure

Except as modified in the last paragraph of this Section, every building shall be designed to resist a horizontal wind pressure of 25 pounds for every square foot of exposed surface, in addition to the dead loads and the live loads specified above.



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If the overturning moment due to wind pressure exceeds 75 per cent of the moment of stability of the structure due to dead load only, the structure shall be anchored to its foundations, which shall be of sufficient weight to insure the stability of the structure; and sufficient diagonal bracing or rigid connections between uprights and horizontal members shall be provided to resist distortion.

The overturning moment may be disregarded in a structure less than 100 feet in height if the height does not exceed twice the width.

When the stress due to wind in any member is not greater than 50 per cent of the stress due to the dead and live loads, it may be neglected. When the wind stress is greater than 50 per cent of the dead and live load stresses, then the sum of all these stresses shall not exceed 150 per cent of the stresses hereinafter provided.

Section 43. Foundations

The permissible loads on natural earth shall not be more than the following, in tons per square foot:

	Tons Sq. Ft.
Quick sand and alluvial soils.....	1/2
Soft clay	1
Ordinary clay and sand together in layers, wet and spongy.....	2
Clay or fine sand, firm and dry.....	3
Sand, compact and well cemented.....	4
Gravel and coarse sand, well packed.....	5
Hard pan or shale.....	6

The maximum load on a timber pile shall not exceed 500 pounds per square inch, and shall be determined by the following formula:

$$L = \frac{2W_1}{S \text{ plus } 0.1} \text{—for steam hammer}$$

$$L = \frac{2WH}{S \text{ plus } 1} \text{—for drop hammer}$$

in which formula

L=safe load in pounds

W=weight of hammer in pounds

H=fall of hammer in feet

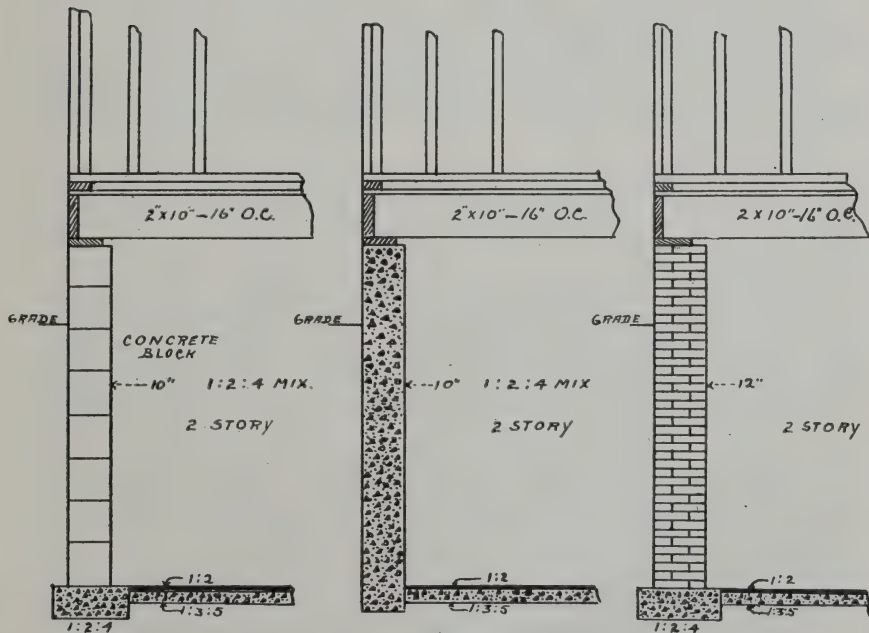
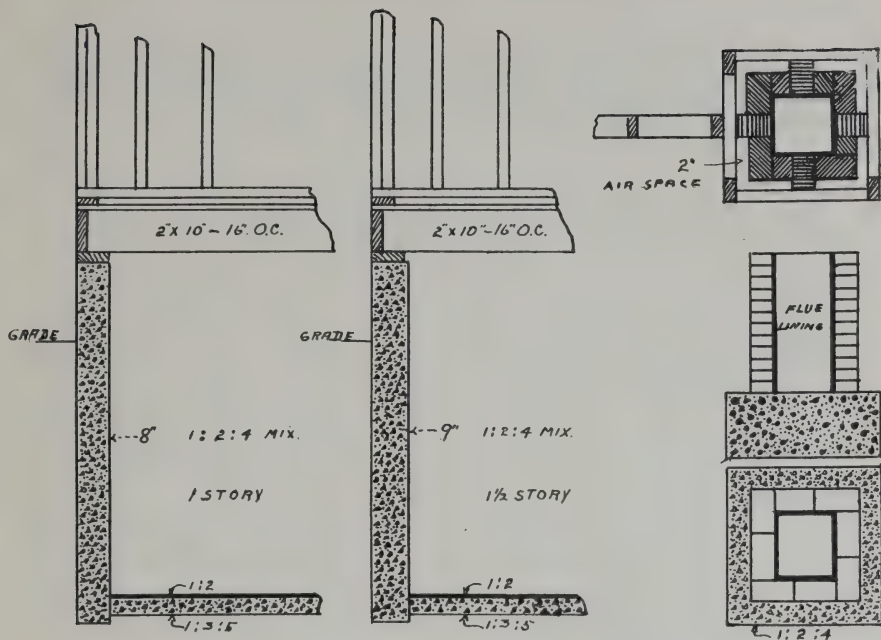
S=penetration under last blow in inches, assumed to be sensible at an approximately uniform rate.

Size of Foundation Walls for Dwellings When Not Over Four Feet Below Grade

One story house not less than.....	8 inch wall
One and one-half or two story house not less than.....	10 inch wall

Section 44. Masonry Construction

Masonry construction is that form of construction in which the material is laid up unit by unit and set in mortar.



Constructional View—Basement Walls

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Unit Stresses. The following unit compressive stresses (pounds per square inch) shall not be exceeded in masonry laid in portland cement mortar:

	Lbs. Sq. In.
Brick, standard common (crushing strength 1,800 lbs. sq. in.)....	175
Brick, hard or select (crushing strength 3,000 lbs. sq. in.).....	270
Concrete Brick (crushing strength 1,500 lbs. sq. in.).....	200
Hollow Concrete Block or Tile or Hollow Clay Tile (on gross area)	90
Solid Concrete Block.....	150
Rubblestone Work	150
Cut Stone Masonry other than Sand-Stone.....	400
Sand-Stone Masonry	300

For any other type of masonry the unit stress shall be calculated on the basis of a factor of safety of 10 or more, in accordance with standard practice.

Mortar. Portland cement mortar used in laying up masonry shall be mixed in the proportion of one part of portland cement to not more than three parts of sand, by volume. Hydrated lime or lime putty may be added to an amount not exceeding 10 per cent, by volume, of the portland cement used.

Cement and lime mortar shall be mixed of one part of equal volumes of portland cement and lime to not more than 3 parts of sand.

Lime mortar shall be mixed in the proportion of one part of lime to not more than 3 parts of sand.

Whenever cement and lime mortar is used instead of portland cement mortar, the allowable working stresses on the masonry shall be reduced to 75 per cent of that allowed with portland cement mortar.

Whenever lime mortar is used instead of portland cement mortar the maximum allowable working stress shall be reduced to 50 per cent of that specified for masonry laid up with portland cement mortar.

Masonry Bearing Walls. For all non-fireproof buildings except office buildings and buildings of the dwelling, apartment house and hotel class, the outside, party, division and other bearing walls shall be not less than 12 inches thick in the upper two stories, increasing four inches in thickness for each two stories (or fraction) below, except as hereinafter provided; no such two-story height shall exceed 30 feet. But the first story side walls of a three-story building may be 12 inches thick if laid in portland cement mortar and if the second floor joists are supported by wall hangers. Any wall which is not more than 50 feet long between cross walls may be reduced to the thickness specified for fireproof building.

For all fireproof buildings, and for non-fireproof office buildings and buildings of the dwelling, apartment house and hotel

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class, the outside party, division and other bearing walls shall be not less than twelve inches thick in the upper three stories, increasing four inches in thickness for each three stories, or fraction increasing four inches in thickness for each three stories (or fraction) below, except as hereinafter provided; no such three-story height shall exceed 45 feet.

A building not more than three stories in height may have 8 inch walls in the upper story, provided such story is not more than 10 feet high in the clear, and the roof span is not more than 25 feet, and the wall is not more than 60 feet long between cross walls, offsets or pilasters. A building not more than one story in height may have 8 inch walls provided the clear story height is not more than 12 feet, the roof span is not more than 25 feet, and distance between cross walls, offsets or pilasters is not more than 60 feet.

Dwelling houses two stories high may have 8 inch masonry walls in both stories provided the masonry is laid up in portland cement mortar having a lime content of not more than 10 per cent of the volume of cement and provided further that the clear story heights are not more than 10 feet.

All other one-story buildings shall have all bearing walls not less than 12 inches thick.

Eight inch bearing partition walls may be 14 feet high in the clear, but not more than 40 feet long between pilasters or cross walls. But no 8 inch masonry wall shall serve as a party or fire wall, except in rows of dwellings.

Every wall shall be bounded with header courses extending through the wall at intervals no greater than every sixth course.

If any horizontal section of any bearing wall shows more than 40 per cent reduction of area on account of flues, opening or recesses, the wall shall be proportionally increased in thickness.

Masonry foundation walls shall be at least four inches thicker than the wall next above and not less than 12 inches thick except that one-story dwelling houses may have 8 inch masonry foundation walls if laid in portland cement mortar, and if the clear story height of the building is not more than 10 feet.

Curtain Panel Walls. Curtain panel walls of masonry supported at every floor level shall be not less than 8 inches thick.

Stone Walls. Stone walls shall be four inches thicker than required for walls of brick and shall be similarly bonded.



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Stone or Terra Cotta Facing. Stone facing not less than four inches thick, and architectural terra cotta which extends not less than four inches into the wall and which is filled solid with concrete or brick and mortar, may be considered as part of the required thickness of a wall if substantially bonded to the backing as required for brickwork. No such wall shall be less than 12 inches thick.

Double Masonry Walls. In all masonry bearing walls that are built double, the quantity of material shall be not less than two-thirds of the quantity required for solid walls, and the parts of the wall shall be connected with approved ties placed not more than 24 inches apart, both vertically and horizontally.

Hollow Clay Tile. In buildings not over three stories and not more than 45 feet high, hollow clay tile may be used for outside walls and inside bearing walls, as well as for non-bearing partitions. Such tile, except for non-bearing partitions, shall have an ultimate compressive strength of not less than 700 lbs. per square inch of gross area. In computing the gross area, no deduction shall be made for hollow spaces.

Each tile shall bear a permanent brand or mark identifying the manufacturer of the tile. A copy of said brand or mark shall be on file with the Building Commissioner.

The hollow spaces in clay tile shall not exceed 55 per cent, except that in one-story buildings the hollow spaces may be 60 per cent. The absorption shall not exceed 12 per cent of the weight of the tile in 48 hours.

Such walls shall be laid in portland cement mortar. The thickness of such walls shall be the same as required for brick walls, but no such wall shall be higher than 15 times its thickness.

Brick facing may be considered as part of a hollow clay tile wall (or vice versa) if the two materials are properly bonded with header courses not farther apart than every sixth course of brick.

Concrete Block and Tile. Concrete block and tile masonry bearing walls and piers shall be approved by the Building Commissioner or shall meet the following requirements:

(a) Each block shall bear a permanent brand or mark identifying the manufacturer of the block. A copy of said brand or mark shall be on file with the Building Commissioner.

(b) Before approval of the product of any manufacturer, compression and absorption tests on samples selected by the Building Commissioner shall be made at the expense of the manufacturer at a laboratory of recognized standing. The ultimate compressive strength of hollow and two-piece units at 28 days must average 700 pounds per square inch of the gross cross-sectional area of the unit as used in the wall. The gross cross-sectional area of hollow building units shall be considered

the product of the length by the width of the unit. The gross cross-sectional area of a two-piece concrete building unit shall be one-half the product of the length of the unit by the width of the wall for which the units are intended.

(c) The ultimate compressive strength of solid concrete building units at 28 days must average not less than 1,200 pounds per square inch of the cross sectional area of the unit tested as used in the wall.

(d) The average amount of water absorbed in 48 hours by three units 28 days old shall not exceed $12\frac{1}{2}$ pounds per cubic ft. of concrete (actual volume) contained in any block.

(e) At least three samples of each unit tested for either compressive strength or absorption shall be selected so as to represent as nearly as practicable the average quality of the product of the manufacturer.

(f) The product of any manufacturer which has been tested within the next proceeding six months may be accepted for use by the Building Commissioner without being tested, but tests may be required at any time when in the opinion of the Building Commissioner the product does not meet with the requirements of this code. Rejected block may be used in non-bearing partitions and in one-story structures outside the fire limits if specifically approved by the Building Commissioner.

(g) Brick facing may be considered as part of a concrete block or tile wall (or vice versa) if the two materials are properly bonded with header courses not farther apart than every sixth course of brick.

Parapet Walls. All exterior, division and part walls of non-fireproof buildings shall have parapet walls not less in thickness than the wall below, carried to 3 feet above the proof and capped with incombustible material; but this paragraph shall not apply to buildings where frame construction would be permitted; nor to walls of buildings where not less than 10 feet of vacant space is maintained between the wall and the boundary line between premises.

Recesses. Recesses for water, sewer or other pipe shall not be deeper than one-third the thickness of the wall and the recesses around such pipes shall be filled with solid masonry for a space of one foot at the top and bottom of each story.

Old Walls. Walls heretofore built as party walls but which are not in accordance with the requirements of this section may be used if in good condition provided the height of the same be not increased.

In case it is desired to increase the height of an existing party or independent wall, which is less in thickness than required under this section, the same shall be done in one of the following ways:

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(1) By lining of mason work, supported on a proper foundation and forming a combined thickness with the old wall of not less than 4 inches more than the thickness; required for a new wall; no lining shall be less than 8 inches in thickness; no lining shall be laid up in cement mortar, and thoroughly anchored to the old wall with suitable anchors, placed not over 2 feet apart, the old wall being first cleaned of plaster or other coating; or

(2) Such old wall may be increased in height if the new live and dead loads are uniformly distributed over the entire old wall by means of a distributing girder and if the total load does not exceed the allowable unit stresses; or

(3) The new wall may be carried by steel or concrete columns.

Section 45. Concrete Construction

Unit Stresses and Reinforcement. The following unit working stresses in pound per square inch shall not be exceeded in concrete having an ultimate crushing strength of 2,000 pounds per square inch.

Steel, Structural Grade, in Tension.....	16,000
Steel, Intermediate Grade, in Tension.....	18,000
Steel, High Carbon, in Tension.....	18,000
Cold Drawn Steel Wire.....	18,000
Steel to resist Diagonal Tensile Stress.....	12,000
Direct compression on plain concrete piers.....	500
Direct compression on columns, in concrete alone.....	500

Compression in vertical reinforcement in columns: Modulus ratio "n" times stress in concrete.

(For computation, steel in spirals of hooped columns may be considered as vertical steel equal to two and one-half times the volume of the spiral steel.)

Extreme fibre stress (in bending) in concrete in compression ...	650
Extreme fibre stress in concrete adjacent to supports in continuous beams	750
Bond stress, plain bars.....	80
Bond stress, deformed bars.....	100
Shearing stress in concrete alone (on the section bjd).....	40
Maximum shearing stress where web steel is adequately anchored	120

Where constant inspection of construction is maintained under the supervision of the architect or structural engineer responsible for the structural design, or by some other person acceptable to the Building Commissioner, and where the consistency of the concrete is regulated by "Slump Tests" and the compressive strength of the concrete is checked by frequent tests on cylinders as the work proceeds, the maximum shearing stress in concrete testing 2,000 pounds per square inch or more at the age of 28 days may be 240 pounds per square inch in members having both the web steel and the longitudinal steel anchored mechanically or by means of hooks.

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Punching shear in concrete where the depth to reinforcing steel is less than one-fifteenth of the span in beams and slabs, or less than one-third of the overhang of cantilevers and footings may be 120.

Where the depth is greater than these limits the punching shear may be 200.

Vertical shear on periphery of drop panel of flat-slab floor, measured on depth jd 60.

The concrete used for reinforced concrete construction shall develop an average crushing strength of not less than 2,000 pounds per square inch in tests of at least five cylinders 6 inches in diameter and twelve inches high, 28 days after mixing. The samples must be of the same material consistency and proportions as that used on the work. They shall be taken from the regular batches of concrete and shall be made and stored in accordance with the Standard Method of Making and Storing Specimens of Concrete in the Field, adopted in 1921 by the American Society of Testing Materials, and tested in a laboratory of recognized standing. The laboratory shall furnish the Building Commissioner with a copy of the results of the tests.

Concrete mixtures which develop an average crushing strength greater than 2,000 pounds per square inch 28 days after mixing, shall be allowed a proportional increase in unit working stresses in the concrete and in the bond between concrete and steel. If the average strength is less than 2,000 pounds per square inch a proportional reduction in allowable stresses must be made and the allowable load on the structure must be reduced accordingly. In the absence of definite knowledge in advance of construction, the average crushing strength may be assumed as 2,000 pounds per square inch for concrete having one part of cement to six parts of the combined aggregates (the two classes of aggregates being measured separately) 2,500 pounds per square inch for one part of cement to four and a half parts of aggregates, and 3,000 pounds per square inch for one part of cement to three parts of aggregates.

Reinforced Concrete Columns. Reinforced concrete columns having an unsupported length greater than 15 times the least side or diameter of the column shall not be stressed to an amount greater than the quantity

WAUKEGAN BUILDING CODE

$$\frac{4}{3} \quad \frac{L}{45D}$$

multiplied by the allowable stress specified elsewhere in this section. In this formula "D" is the least side or diameter of the column, and "L" is its unsupported length, both expressed in inches.

For columns subject to eccentric loading or bending the combined bending and direct stress on the extreme fibre of the gross column section shall not exceed the extreme fibre stress in concrete in compression as specified in this section.

Steel and Cast Iron Columns Encased in Concrete. In steel columns filled with concrete and encased in a shell of concrete at least three inches thick, where the steel is designated to carry the entire load, the allowable stress in lb. per sq. in. may be

$$18,000 - 70 \frac{L}{R}, \text{ where "L"}$$

is the unsupported length of the column, in inches and "R" is the least radius of gyration of the steel section, in inches. In no case shall the stress exceed 16,000 lb. per sq. in. The concrete shell shall be reinforced with wire mesh or hooping weighing at least 0.2 lb. per sq. ft. of surface of shell.

When the details of the structural steel are such as fully to enclose or encase the concrete, or if spiral steel is provided equal to one-half of one per cent of the core area and having a pitch not more than 3 inches, the concrete inside the column core or spiral may be loaded to the amount specified in this section for reinforced concrete columns. In addition, the structural steel may be loaded as specified in the preceding paragraph.

Composite columns having a cast iron core or center surrounded by concrete which is enclosed in a spiral of not less than one-half of one per cent of the core area, and with a pitch of not more than three inches, may be figured for a stress of

$$12,000 - 60 \frac{L}{R}, \text{ but not more than 10,000}$$

pounds per square inch on the cast iron section. The concrete within the spiral or core may be loaded to the amount specified in this section for reinforced concrete columns. The diameter of the cast iron core shall not exceed one-half the diameter of the spiral.

If the unsupported length of columns exceeds fifteen times the least outside dimension, the stress in the concrete shall be reduced as required elsewhere in this section for reinforced concrete columns.

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In all columns positive connections shall be provided to transmit to the column steel the loads of all rod-reinforced beams and girders framed into the columns.

Protection of Reinforcing Steel. Reinforcing Steel shall be protected by a minimum of two inches of concrete on girders and columns, $1\frac{1}{2}$ inches on beams, and one inch on floor slabs.

Standard Practice. Features of design and construction not covered by this code shall be governed by the rules and principles of standard practice, as published in the Final Report of the Joint Committee on Concrete and Reinforced Concrete, dated July 1, 1916.

Materials and Supervision. Steel for reinforcement shall conform to the "Standard Specifications" for concrete reinforcement adopted by the American Society for Testing Materials.

Portland cement shall conform to the Standard Specifications and Tests for Portland Cement adopted by the American Society for Testing Materials (serial designation C-9-21) effective January 1, 1921.

Fine aggregate shall consist of sand, stone screenings or other inert materials with similar characteristics, or a combination thereof, having clean, hard, strong, durable, uncoated grains and free from injurious amounts of dust lumps, soft or flaky particles, shale, alkali, organic matter, loam or other deleterious substances.

Coarse aggregate shall consist of crushed stone, gravel, crushed air-cooled blast furnace slag, or other approved inert materials with similar characteristics, or combinations thereof, having clean, hard, strong, durable uncoated particles free from injurious amounts of soft, friable, thin, elongated or laminated pieces, alkali, organic or other deleterious matter.

Crusher-run stone, bank run gravel or mixtures of fine and coarse aggregate prepared before delivery shall not be used without being re-screened and graded.

Water for concrete and mortar shall be free from oil, acid, alkali, organic matter, or other deleterious substances.

The supervision required by Section 26 includes in the case of concrete structures, a close personal supervision by an experienced superintendent or inspector of the placing of reinforcement, mixing and placing of concrete, and removal of falsework or forms. Especially close supervision is necessary when the temperature falls below 40 degrees F.

Concrete Walls. Plain concrete walls of 1:2 1-2:5 mix or better may be built four-fifths of the thickness of masonry walls in Section 44. Walls of 1:2:4 mix or better may be built two-thirds of the thickness required for masonry walls, but the thickness of basement walls shall be not less than the wall immediately above, and not less than 8 inches.

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Walls of reinforced concrete may be of less thickness than required for plain concrete walls if properly reinforced in accordance with the requirements specified in this section for reinforced concrete. If such a wall serves as a required division or fire wall, or as the outside wall of a building required to be of fireproof or mill construction, such wall shall be of 1:2 1-2:5 mix or better, not less than six inches thick, and reinforced with steel weighing not less than $\frac{1}{2}$ pound per square foot properly distributed. Such thickness and reinforcement shall be increased where necessary in accordance with standard practice.

Reinforced concrete curtain walls supported at every floor level shall be not less than four inches thick.

The separate sections of double or triple concrete walls shall have a combined thickness not less than the thickness required for single concrete walls, but no section shall be less than four inches thick. The sections shall be tied together with $\frac{3}{8}$ -inch round or square galvanized or tar-coated rods, with 2 inch hooks at each end, the rods to be spaced not more than 18 inches horizontally and vertically.

(For concrete walls in dwelling house construction, see Section 107).

Section 46. Steel and Iron Construction

The following unit stresses (pounds per square inch) shall not be exceeded:

Tension, net section, rolled steel.....	16,000
Direct compression, rolled steel and steel castings.....	16,000
Bending, on extreme fibres of rolled shapes, built sections, girders and steel castings.....	16,000
Bending on extreme fibres of pins.....	24,000
Shear on shop rivets and pins.....	12,000
Shear on bolts and field rivets.....	10,000
Shear (average) on webs of plate girders and rolled beams, gross section	10,000
Bearing pressure on shop rivets and pins.....	24,000
Bearing on bolts and field rivets.....	20,000

Pressure in pounds per lineal inch on expansion rollers shall not exceed 600 times the diameter of rollers in inches.

Axial compression on gross sections of rolled steel or shop riveted columns for ratio of L-B up to 120 may be 19,000—100xL-R with a maximum of 13,000 where L equals effective length of member in inches, R equals corresponding radius of gyration of section in inches.

Every steel or iron structure shall be designed in accordance with this code and with the rules and principles of standard practice.

All steel and iron shall conform to the standard specifications of the American Society for Testing Materials in force October 1, 1924.

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Section 47.

	Tension		Compression		Trans- verse Ex- treme fibre	Shear With Grain
	With grain	Across grain	With grain	Across grain		
White oak	1,200	125	1,100	500	1,500	150
White pine	700	50	900	200	1,000	80
Long leaf yellow pine.....	1,200	60	1,500	350	1,700	150
Short leaf yellow pine.....	1,000	50	1,100	300	1,400	100
Douglas fir	1,000	50	1,300	325	1,600	110
Norway pine	800	50	1,000	250	1,200	100
Eastern spruce and fir....	800	50	800	200	1,000	80
Hemlock	600		900	200	1,100	80

Stud Partitions. Studs in a bearing wall shall not be less than 1½x3½ inches, with the 3½ inch dimension at right angles with the plane of the wall. Wooden stud partitions and walls shall be capped with a two-inch plate below the floor joists; or if the studs run through pieces of studding shall be fitted in between so as to form a fire stop. No lath shall extend through from room to room.

(For "semi-fireproof" stud partitions see Section 19).

Furring for Walls. When walls are furred, unless the wall between joists is built out to face of lath, there shall be a continuous horizontal strip placed close to the joists at top and bottom; and before the lathing is done, the wall shall be plastered with a coat of mortar at least six inches wide and of the full thickness of the strip, just above or below each horizontal strip. Wooden lath or furring shall not be used in any building of fireproof or mill construction.

Floor and Roof Beams. The ends of all wooden floor or roof beams or joists which rest on a masonry wall shall enter the wall to the depth of 4 inches, unless wall hangers are used, or unless the wall is properly corbeled out four inches, in which case the corbeling shall extend to top of joists.

Walls shall be anchored to the floor and roof construction with iron or steel wall anchors placed not more than 8 feet apart.

The ends of all such beams or joists shall be so shaped or arranged that in case of any deflection, or breaking, they may fall out without doing much injury to the brick wall. All joists entering any brick or stone wall shall be splayed approximately three inches shorter at top edge.

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No wooden beam or other timber shall be built into a party wall nearer than two inches to the center of the wall.

PART V

Factories, Office and Mercantile Buildings

The requirements of the following sections apply to buildings of this classification only.

For other general requirements see Parts I to IV.

Section 48. Classification

This classification includes all factories and workshops (including all places where manual labor is employed), office buildings, telegraph and telephone offices, mercantile establishments where commodities are bought and sold, warehouses, railroad stations, exhibition buildings, and places where less than 100 persons assemble for entertainment, worship, or dining purposes.

Section 49. Exits

Number and Location. Every building and every story thereof shall have at least two exits, with the following exceptions:

(1) First and second story storage rooms not over 3,000 square feet in area;

(2) The second story of a two story building, provided such story is used only for offices; is not over 3000 square feet in area; and has a stairway enclosed with fireproof or semi-fireproof partitions, leading directly to the outside and not leading to the basement.

Additional exits shall be provided, if necessary, so that no part of the building will be more than 75 feet distant from an exit, measuring along public passageways and aisles; but such distance may be increased to 100 feet in the following buildings, provided no hazardous condition exists therein:

(1) Fireproof building whose contents are entirely or almost entirely incombustible;

(2) Fireproof office buildings;

(3) Fireproof storage warehouses with fireproof individual compartments;

(4) Buildings having an approved automatic sprinkler system, provided the contents are not especially inflammable.

Exits shall be so located as to afford the best possible egress.

Type of Exits. At least one-half of the exits above required shall be stairways (See Section 20.) The other exits shall be either stairways, or horizontal exits (Section 21), or fire escape (Section 22.) But no fire escape shall be accepted as an exit from any floor which is more than 60 feet above the grade at the point where such fire escape is located, except that such

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height may be increased to 90 feet in the case of fireproof office buildings or fireproof buildings where such floors are used for storage only. In a two story building, an outside wooden stairway may be used as an exit.

Every building which accommodates more than 50 persons above the second floor shall have at least two exits other than fire escapes, except fireproof office buildings and other fireproof buildings whose contents are entirely or almost entirely incombustible, provided such building does not exceed 7000 square feet in floor area at the third floor.

Type of Building

	Stairways to be enclosed if building exceeds number of stories		
	Non-fire-proof, not Sprinklered	Either fire-proof or Sprinklered	Fireproof and Sprinklered
Office Buildings; other buildings whose contents are practically incombustible	3	4	5
All other factories, stores, and other business buildings	2	3	4

Enclosure of Stairways. In all buildings having a greater number of stories than the number given in the table at the top of this page, all stairways shall be enclosed as specified in Section 20.

Exceptions. (1) A three-story mercantile building having at least two stairways may have one stairway unenclosed provided such stairway does not lead to the basement.

(2) A fireproof building having at least two stairways may have one stairway unenclosed from the first to the third (or second) floor, provided such stairway is enclosed in the third (or second) story and does not lead to the basement.

(3) Stairways must be enclosed in all buildings of more than two stories where inflammable material or any other especially hazardous condition is present.

A fire escape shall be provided on every building of more than two stories which does not have at least two enclosed stairways, or one enclosed stairway and a horizontal exit.

One enclosed stairway may serve as an exit for two divisions of a building if each division has a door opening directly into the stairway enclosure; provided each division shall have at least two means of reaching the ground, either directly or indirectly.

Total Width. In a building not provided with horizontal exits, the total width of stairways shall be not less than the following:

In ordinary or frame buildings, 60 inches per 100 persons; if sprinklered, 40 inches per 100 persons.

In fireproof and mill buildings, as indicated in the table at the bottom of this page.

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Standard fire escapes (Section 22) may be substituted for stairways to the extent of not more than one-third of the required total width subject to the provisions of this section, under the heading "Type of Exits."

If horizontal exits (Section 21) are provided for any floor, the number of persons accommodated on such floor may be increased at the rate of 100 persons for each 40 inches width of such exits, provided such increase shall not exceed 100 per cent of the number of persons accommodated by the stairways.

Example. As examples of calculations under this section where the same number of persons are to be accommodated on each floor, the following table shows the number accommodated by two stairways of minimum width (each 44 inches wide):

Frame and ordinary buildings, 147 persons total, above first story; if sprinklered, 220 persons.

Fireproof and mill buildings, as indicated in the table following:

Inches per persons on 2nd floor	Type of Building				In. per 100 persons on:—
	Fireproof, sprinklered	Fireproof, not sprinklered	Mill sprinklered	Mill, not sprinklered	
100	30	50	40	60	
plus	15	25	20	30	3rd floor
plus	12	20	16	24	4th floor
plus	9	15	12	18	5th floor
plus	6	10	8	12	6th floor
plus	3	5	4	6	7th floor
plus	0	0	0	0	8th floor
but in no case shall such total widths be less than					and above
	30	50	40	60	In. per 100 persons on any one floor

Height of Building	Type of Building				
	Fireproof, sprinklered	Fireproof, not sprinklered	Mill sprinklered	Mill, not sprinklered	
2 stories	293	175	220	147	persons on each floor
3 stories	195	117	147	98	persons on each floor
4 stories	154	92	116	77	persons on each floor
5 stories	133	80	100	67	persons on each floor
6 stories	122	73	92	61	persons on each floor
More than 6 stories	117	70			persons on each floor

Where the minimum stairway and one "A" fire escape are provided take $\frac{3}{4}$ of the above numbers; subject to the limitations of Section 49.

Capacity of Buildings: In calculating the aggregate widths of exits, the capacity of a building shall be established as follows:

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In wholesale mercantile establishments and warehouses, by the number of persons employed therein plus an equal number of customers.

In dining rooms, cafes, and lunchrooms, by allowing 15 square feet of floor per person. (If the room accommodates more than 100 persons see Section 58).

In retail mercantile establishments and exhibition halls, the capacity shall be determined by the architect or owner and no greater number of persons shall be permitted therein; but such number shall in no case be less than one person per 60 square feet of gross floor area excluding elevators and stairways.

In all other buildings, the capacity shall be determined by the actual numbers of persons likely to be engaged therein and no greater number of persons shall be permitted therein. (See Section 57).

Exit Doors. Every door which serves as an exit from a room accommodating more than ten persons (as well as doors which are exits from public passageways or stairways) shall be a standard exit door as defined in Section 23 except that such exit door need not swing outward if it accommodates less than 25 persons and is not located at the foot of a stairway, and is not more than four risers above the outside grade. Over every emergency exit door, and over every exit door where other doors or openings may cause confusion, a sign shall be placed bearing the word "Exit" or "Out" in plain letters at least five inches high. (For red lights see Section 23).

Passageways. Every public passageway, fire escape or aisle leading to or from a stairway, fire escape, or exit door, shall conform in width to the rule for width of stairways specified in this section. The required width shall be kept clear and unobstructed at all times. Where loose chairs or seats would be likely to cause confusion or obstruction, such chairs or seats must be fastened.

Section 50. Scuttle

Every building or section of a building two stories or more in height shall have a permanent means of access to the roof from the inside. The opening shall be not less than 20x30 inches and there shall be a permanent ladder or stairway leading thereto.

Section 51. Elevator Enclosures

Elevator enclosures shall be designed and built in accordance

WAUKEGAN BUILDING CODE

with Section 19, under paragraph entitled "Standard Fireproof Enclosures or Partition."

Section 52. Trap Doors and Floor Openings

Every opening through any floor shall be guarded by a substantial enclosure or rail at least three feet high. Floor openings in buildings of more than two stories, unless enclosed with standard fireproof enclosures, shall be protected by standard fire doors, except that two stories may be connected by openings without fire doors if their combined floor area does not exceed the permissible floor area according to Section 28.

Section 53. Lighting

All passageways and stairways when used at night shall have lights at the head and foot of each flight of stairs, and at the intersections of all corridors and passageways. Where "B" fire escapes are required, such fire escapes shall be lighted whenever the stairways are required to be lighted. (For red exit lights see Section 23).

All gas jets or gas lights in factories or workshops where combustible material is used shall be properly enclosed by globes or wire cages, or otherwise properly guarded. (See also Sections 35 and 36).

Section 54. Toilet Rooms, Lavatories and Dressing Rooms

Number of Closets and Urinals. In every place of employment, whether heretofore or hereafter constructed, one water-closet shall be provided for every 20 persons, or fraction thereof, of either sex.

In addition thereto, where more than 10 males are employed, one urinal shall be provided for every 40 males, or fraction. Where not more than 10 males are employed, either a urinal shall be provided or the water closet shall have a projecting lip and self rising seat. Where trough urinals are used, each two feet of trough shall constitute one urinal.

(Also see Section 39).

Toilet Room, Lavatories. Adequate washing facilities shall be provided in or near every toilet room. In new installations there shall be at least one lavatory for every five fixtures (closets and urinals) or fraction.

Shop Lavatories. Adequate washing facilities shall be provided (1) in all industries where lead, arsenic, or other poisonous or injurious materials are handled by the employes, and (2) in industries where food is prepared or manufactured, and (3) in glue factories, foundries, machine shops and other industries where the employes' hands become dirty or greasy. In new installations there shall be at least one lavatory for every ten employes, or fraction, and hot water shall be provided. Basins or troughs for common use are prohibited.

All lavatories must be made of porcelain, enameled iron, or other impervious material.

Drinking Water. Each place of employment must be supplied with sufficient pure drinking water and the faucets or outlets for same must be placed convenient to the employees. Common drinking cups are prohibited. Sanitary drinking fountains must be installed or individual cups must be provided by the employer.

Dressing Rooms. Dressing rooms shall be provided where women are employed in factories, stores, laundries, restaurants, and telephone, telegraph, express and railroad offices. Every dressing room shall be properly lighted, ventilated, and heated.

Section 55. Standpipes, Fire Extinguishers and Sprinklers

Standpipes and Extinguishers. (For exterior standpipes see Section 22).

Standard interior standpipes (Section 25) shall be provided in all buildings of more than two stories and more than 3000 square feet undivided floor area, where inflammable material or any other hazardous condition is present, unless an approved automatic sprinkler system is provided. The hose shall be long enough to reach to all parts of the building but no longer than 100 feet.

Wherever water supply of sufficient pressure is not available, two standard fire extinguishers (Section 25) shall be provided on each floor in place of each required interior standpipe.

Automatic Sprinklers. A complete automatic sprinkler system (Section 25) shall be provided in every building of this classification (except office buildings not used for mercantile purposes) where more than 50 persons are employed or accommodated above the third story except as provided below.

In every such building where more than 50 persons are accommodated above the second story, an automatic sprinkler system shall be provided in the basement and sub-basements.

An office building in which one or more of the lower floors is used for mercantile purposes, shall be classed as a merchants building, except that no sprinklers will be required in such portions of the building as are used for offices only.

No sprinklers will be required in building of fireproof construction whose contents are not readily combustible.

Section 56. Fire Alarm

An approved fire alarm system shall be provided in every factory or workshop where more than 10 persons are employed above the second story, except buildings which are provided with a complete automatic sprinkler system, and except fireproof buildings whose contents are practically incombustible.

Section 57. Notice of Loads and Persons Accommodated

Floor Loads. In every factory, workshop, warehouse, or other building where material is piled, notices of a permanent char-

acter shall be painted or otherwise prominently displayed, stating the live load (pounds per square foot) which the floor is designed to carry. Such notices shall be placed in full view, on each floor.

Number of Persons. In all buildings of this classification where 50 or more persons are accommodated on any floor above the second, notices shall be prominently displayed stating the maximum number of persons on each floor for whom stairways and other exits have been provided according to Section 49. Such notices shall be placed in full view, on each floor.

PART VI

Theatres and Assembly Halls

The requirements of the following sections apply to buildings of this classification only.

For other general requirements see Parts I to IV.

For assembly halls in schools, see also Section 82.

Section 58. Classification

Theatres. This classification includes all buildings or parts of buildings used for theatrical, operatic, or motion picture performances of a public nature, except as provided in this Section.

Assembly Halls. This classification includes all buildings or parts of buildings not included under "theatres," where 100 or more persons assemble for entertainment, instruction, worship or dining purposes.

A private assembly hall is one built in connection with a school, club, church, or society building, and used only for private gatherings, and not rented for public use. Every other assembly hall is a public assembly hall.

Occasional private motion picture performances (not more than two in any week) may be given in a private assembly hall, but in all such cases a fireproof booth must be provided according to Section 75.

Occasional private theatrical or operatic performances (not more than two in any week) may be given in a private assembly hall; but in all such cases the stage must be protected as in Sections 67,68 and 73.

Occasional motion picture or theatrical performances may be given in a public assembly hall which is located on the first floor and accommodates not over 300 persons. In all such cases a fireproof booth must be provided and the stage must be protected as in Sections 67,68, 73 and 75. No place of assemblage shall be located over any such assembly hall.

Section 59. Height and Class of Construction

Theatres. The main entrance or entrances shall not be at a higher level than three steps of six inches each, above the side-

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walk at that point. The floor level at the highest row of seats, on the main floor, shall not be more than six feet above the sidewalk level at the main entrance; and the floor level at the lowest row of seats, on said floor, shall not be more than six feet below the level of the adjoining sidewalk.

Theatres which accommodate not more than 400 persons shall be of ordinary construction or better.

Theatres which accommodate more than 500 persons shall be of fireproof construction; except the stage floor which shall be of fireproof or mill construction (steel beams need not be fireproofed); and except the roof, which may be of wood but must have an incombustible roof covering. If the theatre accommodates more than 1,000 persons, the roof shall be incombustible throughout.

Balconies and Galleries shall be of Fireproof Construction. No balconies or galleries will be permitted in theatres which accommodate 500 persons or less unless the buildings are built as specified above for theatres accommodating more than 500 persons.

Assembly Halls. Assembly halls which accommodate more than 1,000 persons shall be of fireproof construction. Balconies and galleries shall be of fireproof construction. Assembly halls which accommodate not more than 1,000 persons shall be of ordinary construction or better except as follows:

Assembly halls accommodating not more than 750 persons may be built of frame construction provided the following conditions are complied with:

(1) The entire building shall be not more than one story high nor more than 6,000 square feet in area.

(2) The foundation walls and piers shall be of incombustible construction.

(3) The building shall be at least 10 feet away from any other building or adjoining lot line.

(4) The balcony shall not accommodate more than 100 persons, and the balcony stairway shall lead directly to an outside door.

Every assembly hall accommodating more than 750 persons shall have the highest point of the main auditorium floor not more than 8 feet above, and in no case below, the grade line at the main entrance; except that in a building of fireproof construction, the highest point of such auditorium floor shall be not more than 15 feet above such grade.

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An assembly hall accommodating not more than 750 persons and with not more than one balcony, may be placed in the second story of a building of fireproof construction provided the highest point of the main auditorium floor is not more than 22 feet above the grade at the main entrance of the building.

An assembly hall accommodating not more than 400 persons and with not more than one balcony, may be placed in the third story of a building of fireproof construction, provided the highest point of the main auditorium floor is not more than 35 feet above the grade at the main entrance to the building.

In a building which accommodates not more than 1,000 persons the ceiling and the roof may be of combustible material, but the roof covering must be incombustible.

An assembly hall accommodating not more than 400 persons and having no balcony or gallery may be placed on the second floor of a building of ordinary or mill construction, provided the highest point of the floor is not more than 22 feet above the grade at the main entrance of the building.

An assembly hall accommodating not more than 200 persons and having no balcony or gallery may be placed in the third story of a building of ordinary or mill construction, provided the floor level is not more than 35 feet above the grade at the main entrance of the building; or may be placed in any story of a building of fireproof construction. (See also Section 82).

In the case of a private assembly hall, each of the above numbers of persons may be increased 25 per cent.

Section 60. Exposure and Courts

The walls containing the main entrance to any theatre or public assembly hall shall abut on a street. The lobby or passageway leading from the main entrance to the main auditorium door shall be not longer than 50 feet nor longer than three times its width, unless it is enclosed with unpierced fireproof ceiling and floor and with an unpierced standard fire wall on each side, but if the theatre or assembly hall accommodates not more than 500 persons, such passageway shall be enclosed with unpierced fireproof or semi-fireproof ceiling, floor and partitions.

Every theatre or public assembly hall which accommodates more than 300 persons shall have at least three walls abutting on streets, alleys, or open courts, except as follows:

(1) If the building is not more than 100 feet long, and each aisle leads directly to an exit at the rear, then no side court will be required.

(2) If the building is not more than 40 feet wide, and there is a cross aisle leading to a side exit at intervals no greater than every fifteenth row, then only one side court will be required.

(3) If the first floor is fireproof and not more than 500 persons are accommodated, then only one side or rear court will be required.

WAUKEGAN BUILDING CODE

The width of every exit court shall be at least six feet if the total seating capacity is not over 500 persons, and shall be increased at the rate of one foot per 500 persons additional. Every such court shall lead to a public thoroughfare, either directly, or through a passageway of equal width, not less than eight feet high, and having unpierced standard fire walls, and fireproof ceiling and floor designed for a live load of at least 150 pounds per square foot. No such court or passageway shall be used for storage or any other purpose whatsoever except for egress and ingress.

Section 61. Buildings Used for Other Purposes

No sleeping room or apartment shall be placed over a theatre which has a stage unless the entire building is of fireproof construction.

No assembly hall shall be placed over a garage, unless separate therefrom by an unpierced fireproof floor.

Every theatre or assembly hall built in connection with or as a part of a building used for other purposes, shall be separated from such other parts of the building by standard fire walls, except in the following cases:

- (1) fireproof private assembly halls.
- (2) non-fireproof private assembly halls accommodating not more than 400 persons.
- (3) halls in fireproof hotels accommodating not more than 400 persons.
- (4) in non-fireproof buildings, standard fireproof partitions (Section 19) may be used instead of fire walls.

Section 62. Capacity

The capacity of a theatre or assembly hall shall be established by the actual number of permanently fixed seats, plus an allowance of one person for every 3 square feet where "standing room" is provided. Such "standing room" shall not include any aisle, passageway, or lobby. Where permanently fixed seats are not provided, the capacity shall be established by allowing 15 square feet of clear floor space per person in halls and used as dining or dance halls only, or six square feet per person in all other halls. (See Section 64.)

No greater number of persons than the number thus established shall be permitted in any theatre or assembly hall.

Section 63. Exits

Number and Location. Every theatre and assembly hall shall have two or more exits, placed as far apart as practicable, and so located that if any exit is blocked, some other exit will be accessible from every part. Theatre exits shall be distributed on all open sides of the building. (See Section 60 and the paragraph in this section entitled "Width of Exits").

WAUKEGAN BUILDING CODE

This section shall apply separately to the main floor and to each balcony or gallery which seats more than 50 persons, if in a theatre; or more than 100 persons, if in a non-fireproof assembly hall; or more than 150 persons, if in a fireproof assembly hall; also to the stage, dressing room section, and other employes' room.

Type of Exits. Exits from the first floor shall be standard exit doors with incline or steps to grade; if the doorsill is below grade, an incline shall be used except that a private assembly hall may have a stairway exit, from subgrade, or not more than ten risers in all. No part of any incline shall have a rise of more than one foot in five. Exits from upper floors, balconies and galleries shall be stairways (Section 20), horizontal exits (Section 21), fire escapes or inclines.

Stairways. Every stairway in a theatre, public assembly hall, or non-fireproof private assembly hall, except stairways from the main floor to the first balcony, shall be enclosed as in Section 20. No storage closet shall be placed under any stairway.

Stairways and steps which have more than three risers shall have handrails on both sides. (See Section 20).

Every stairway used by the public in a theatre or public assembly hall, shall have a uniform rise of not more than $7\frac{1}{2}$ inches and a uniform tread of not less than 10 inches, measured from tread and from riser to riser; no winders shall be used; there shall be not less than three, nor more than sixteen risers in any run. (For other stairs see Section 20).

Fire Escapes. All fire escapes shall be "B" fire escapes (Section 22) except that "A" fire escapes may be used for balconies which accommodate not more than 100 persons.

Exit Doors. Every required exit door (whether usual or emergency) shall be a standard exit door (Section 23).

No single door or leaf to a double door, shall be more than four feet wide. No two doors shall be hinged together.

No rolling, sliding or revolving door shall be counted as an exit from any theater or assembly hall, nor shall any such door be permitted in any theatre where it would be liable to be used by the public as an exit.

Sills at all exits shall be level and flush with adjacent inside floors, and such floors shall extend without break in the level or gradient for a distance not less than the width of the adjacent aisle.

(For exit lights and signs see Section 71.)

Width of Exits. The total width of exits from every theatre and assembly hall, and from any part thereof, shall be at not less than the following rates:

Theatres, non fireproof, 46 inches per 100 persons.

Theatres, fireproof (except roof), 42 inches per 100 persons.
In theatres, the width of the front entrance or entrances shall

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be at least one-half of the total required width.

Assembly halls, non fireproof, 42 inches per 100 persons.

Assembly halls, fireproof, 36 inches per 100 persons.

Section 64. Seats

All seats, chairs and benches shall be placed not less than 32 inches for adults, or 30 inches for minors, from back to back measured horizontally; except that folding seats of approved design, with backs not more than ½ inch thick, also fixed seats on an approximately level floor in an assembly hall, may be placed not less than 30 inches back to back, for the use of adults as well as minors. If benches without arms between seats are used, the seating capacity shall be established by allowing one sitting or seat to each 18 inches of length.

All seats, chairs and benches, except chairs in boxes or loggias, shall be securely fastened to the floor; or if the floor is level, the seats or chairs may be fastened together in groups of four or more.

There shall be not more than 12 seats in a row between aisles, nor more than 5 seats in a row which has an aisle on one side only.

No seat, bench or platform on which seats are placed shall be more than 22 inches in height or riser. No such seat bench shall be nearer the ceiling than 8 feet.

Section 65. Aisles and Passageways

Width of Aisles. Aisles having seats on both sides shall be not less than 2 feet 10 inches wide at the beginning and shall increase in width toward the exits at the rate of ¼ inch per foot or run; or the aisle may have a uniform width not less than the average width of the foregoing calculation; but no wall aisle shall be less than 3 feet wide and no other straight aisle shall be less than three feet six inches wide.

Where main aisles are longer than 40 feet, there shall be a cross aisle leading to each required side exit. Cross aisles shall be not less than four feet wide.

Passageways and Foyers. Passageways and foyers shall be of width required under Section 63, and in no case less than 5 feet wide, and shall be so designed and apportioned as to prevent congestion and confusion. Passageways and foyers which serve

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as means of egress (whether usual or emergency) shall be at least equal in combined width to the required width of the stairways, passageways or doors leading to them.

Inclines and Aisled Steps. To overcome any difference in level between courts, corridors, lobbies or passageways on the ground floor, inclines shall be employed. Inclines shall not exceed one foot of rise to five feet of run.

Steps in balcony aisles shall extend the full width of the aisle.

Obstruction. All aisles and passageways shall be kept free from camp stools, chairs and other obstructions, and no person except an employe shall be allowed to stand in or occupy any of the aisles, foyers or passageways during any performance or public gathering.

Section 66. Elevator Enclosures

All elevators shall be enclosed with standard fireproof enclosures designed and built in accordance with Section 19, under the paragraph headed "Standard Fireproof Enclosures or Partition."

Section 67. Stage

Where Required. The requirements of this section shall apply to all theatre stages, except that in a motion picture theatre an open platform not more than 8 feet in depth will be permitted in front of the motion picture screen, provided such screen is a stationary fireproof or semi-fireproof wall or partition, and the space behind such screen (if any) is entirely separated from the platform and auditorium by such partitions, and the platform has no curtain or scenery.

In a private assembly hall having a stage or platform which is more than six feet wider or higher than the proscenium opening, or which is equipped with movable scenery, such stage shall be protected as required by this section. (See Section 58).

Proscenium Wall. The proscenium wall shall completely separate the stage from the auditorium, and shall be of brick, plain or reinforced concrete, or other approved material, with all steel-work fireproof, except as follows:

In a private assembly hall, a fireproof partition (Section 19) may be used.

In any theatre or hall which accommodates not more than 400 persons, a semi-fireproof partition (Section 19) may be used.

The proscenium wall shall extend from the basement floor to the roof, except in fireproof buildings. It shall contain not more than two openings of not more than 21 square feet each (excluding the proscenium opening.) Such openings shall be provided with standard fire doors, or (where a semi-fireproof partition is permitted) with wood doors lined with metal on the stage side.

Fireproof Curtain. The proscenium opening shall be provided with a rigid fireproof curtain or a curtain of asbestos

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conforming to the following specifications, or of equivalent approved construction. Detailed plans and specifications for such curtains and their operating mechanism shall be submitted to the Building Commissioner for approval, before installation.

Asbestos curtains shall be substantially woven of asbestos fibre not less than 95 per cent pure and shall weigh not less than $2\frac{1}{2}$ pounds per square yard. All seams shall be lapped not less than one inch and sewed in two rows with not less than 1/16 inch pure asbestos twine. At the top and bottom of the curtain at $1\frac{1}{2}$ inch (or larger) pipe shall be placed and shall be securely fastened in and covered by the curtain. The curtain shall overlap the proscenium wall not less than 12 inches at each side and at the top, and shall be guided at each side by metallic loops or rings sliding on a steel cable. No combustible paint shall be used.

For curtains of any type, the connections between curtain and wall shall be made as nearly smoke-proof as possible. Provision shall be made to prevent the curtain from leaving or binding on the guides under any conditions. No part of a curtain or any of the curtain guides shall be supported by, or fastened to any combustible material.

The hoisting apparatus for the curtain shall be designed with a factor of safety of eight or more.

Besides the regular operating mechanism there shall be an emergency device which will allow the curtain to drop by gravity. The device shall be so arranged that it can be easily operated by hand from each side of the stage and from the fly galleries, and also that its operation will be controlled by fusible links placed on each side of the stage, and when thus operated it shall descend at its normal rate of speed.

The curtain and its operating mechanism shall be so designed and constructed at all points, whether specifically mentioned or not, as to form an efficient and reliable barrier against fire and smoke, according to the best practice.

Automatic Ventilator. The stage shall be provided with one or more automatic ventilators placed near the center and above the highest part of the stage, with the bottom of the opening at least three feet above the roof, and having a combined area equal to at least eight per cent of the area of the stage floor. Vertical louvre openings shall be not less than twice the sectional area of the shaft. The ventilator shall be designed and constructed so as to open by gravity, and so as to effectively overcome the effects of neglect, rust, dirt, frost, snow, heat, twisting, or warping of the frame work. The louvres or dampers in the openings shall be held closed by cotton or hemp cords running to the stage floor close to each stage door. Fusible links shall be inserted in each cord near the ventilation.

Stage Vestibule. All entrances to the stage shall be vestibuled in such manner as to protect the curtain, scenery, and auditorium from draughts of air.

Footlight Trough. The footlight trough shall be made of incombustible material.

Fireproof Paint. All stage scenery, curtains, and decorations made of combustible material, and all woodwork in or about the stage, shall be painted or saturated with some incombustible material or otherwise rendered safe against fire.

Section 68. Dressing Rooms, Property Rooms, Etc.

All dressing rooms, property rooms, and other storage or workrooms shall be built of incombustible material throughout and shall be separated from the stage by fireproof walls or partitions.

No dressing room nor employes' room shall be placed more than one story below the grade line and no dressing room shall be placed above or below the auditorium.

Section 69. Boiler and Furnace Rooms

Every boiler or furnace room, including breaching, shall be enclosed with standard fire walls and with fireproof ceiling and floor each designed to carry a live load of at least 150 pounds per square foot; except that in the case of a private assembly hall accommodating not more than 300 persons, the floors and walls of the boiler or furnace room shall be incombustible, but fire doors and fireproof ceiling will not be required. (See also Sections 30, 34 and 70).

Section 70. Heating and Ventilating

Every theatre and assembly hall shall be provided with a ventilating system which will furnish at least 1,200 cubic feet of fresh air per hour, for each person accommodated in the auditorium and which will also change the air at least six times per hour in all other occupied parts of the building. The fresh air shall be taken from the outside of the building and no vitiated air shall be re-heated unless it has been washed by a mechanical air washer of approved design. No floor register for heating or ventilating shall be placed in any aisle or passageway unless such register is reinforced with suitable wrought iron or steel ribs not more than 12 inches apart. Radiators in passageways or auditorium shall be recessed, or elevated at least seven feet above the floor.

Section 71. Lights

Oil and Gas. (See also Section 35). No oil lamp shall be used in or about any stage containing scenery.

No gas lighting of any kind shall be used on any stage containing scenery, nor in any property room, storage room, scene dock, or fly gallery. Gas fire used for heating water, etc., shall be enclosed in iron jackets.

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Exit Lights. Theatres. Exit lights shall be provided over all exits (both usual and emergency) and in such other places as may be necessary to direct the audience, performers, and employees to a street or alley. Such exit lights shall be either—

(1) Electric lights (See Section 36 and special requirements for theatres in National Electrical Code).

(2) Candles, or oil lamps using non-volatile oil and floating wick; such lights shall be properly shielded from drafts and from adjacent woodwork or other combustible material.

Every light over an exit (both usual and emergency) shall be provided with a red illuminated sign bearing the word "exit" or "out" in plain letters at least five inches high, or a similar sign shall be placed below a red light.

All public parts of the theatre (except the auditorium), and all exit lights, shall remain lighted throughout every performance and until the audience has left the building.

Exit Lights. Assembly Halls. Every assembly hall in which the auditorium is not kept lighted throughout every performance or entertainment, shall be lighted the same as required for theatres, as described elsewhere in this section.

In all other assembly halls, all stairways, passageways, and exit doors shall remain lighted throughout every performance or entertainment and until the audience has left the building. Emergency exit doors shall be marked with red lights as in Section 23.

Section 72. Toilet Rooms

Separate toilet rooms in connection with the auditorium shall be provided for males and females. One closet shall be installed for each 200 females or fraction, and one closet and one urinal for each 300 males or fraction, assuming the audience to be equally divided between males and females; except that in dance halls there shall be provided one water-closet for each 100 females or fraction, one urinal for each 150 males or fraction and one water-closet for each 300 males or fraction.

There shall be separate water closets provided for males and females in connection with the stage of every theatre which accommodates more than 500 persons, except theatres used for motion picture exhibitions only.

Separate drinking fountains shall be provided for the stage and auditorium.

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One washbowl shall be provided for every two closets or urinals, or fraction. (See also Section 39).

Section 73. Fire Protection

Standpipes. (For exterior standpipes see Section 22).

One or more standard interior standpipes (Section 25) shall be provided on the stage of every theatre and every private assembly hall which has a stage (see Section 67). Each hose shall be not more than 75 feet long, and where such hose will not reach all parts of the stage section (including dressing, property, storage and work rooms) additional hose connections and hose, or additional standpipes shall be provided.

Fire Extinguishers. Standard fire extinguishers (Section 25) shall be provided as follows:

All theatres including motion picture theatres:

Two on stage (if more than 1,500 square feet of scenery is used).

One on stage or platform (if not more than 1,500 square feet of scenery is used).

One in motion picture booth, or in ticket office if there is no booth.

One in dressing room section.

Public assembly halls, and private assembly halls which have a stage:

One on or near stage or platform.

One in or near ticket office (if capacity of hall is more than 500 persons).

Extinguishers shall be properly exposed to view and always accessible.

Automatic Sprinklers. Every theatre which accommodates more than 600 persons shall have approved automatic sprinklers (Section 25) on the stage, under the stage, under the fly galleries, and under the stage roof, but not in automatic ventilator.

Fire Alarm. Every theatre which accommodates more than 1,000 persons shall have a fire alarm box on the stage.

Section 74. Mirrors: False Openings

No false opening giving the appearance of a door or window, where none exists, shall be placed in any part of a theatre or assembly hall used by the public.

No mirror shall be placed in any part of a theatre or assembly hall used by the general public except in the women's and men's retiring and toilet rooms.

Section 75. Motion Picture Machines and Booths

Definition. By the term "picture machine" as used in this code is meant any device used to project upon a surface moving pictures of any character which an audience is admitted to view.

WAUKEGAN BUILDING CODE

Construction of Booth. Every picture machine using a nitro-cellulose or other inflammable film shall, before being operated, be installed in a booth constructed entirely of fire resisting material, such as brick, tile, concrete, two-inch plaster on metal lath and metal frame or of sheet iron or asbestos sheathing as specified below; provided that approved types of portable motion picture machines may be used without a booth in factories and offices where employes are assembled for instructional purposes, or in assembly halls having a floor area of not more than 1,200 square feet, where not more than two exhibitions are given each month. In every case where a booth is not used a tight metal cabinet shall be provided and used for storing metal containers of films not in use.

The size of the booth (for one machine) shall be not less than five feet by five by six feet high.

Note: Booths at least six by six by seven feet are recommended.

Every booth made of sheet iron or asbestos sheathing shall have its frame constructed of not less than $1\frac{1}{4} \times 1\frac{1}{4} \times 3/16$ inch steel angles or tees, properly braced to secure rigidity, and securely riveted or bolted at joints. The sheathing shall be not less than No. 20 U. S. gauge sheet iron or $\frac{1}{4}$ inch hard asbestos wood or lumber, securely riveted or bolted to the frame. No sheet metal booth shall be placed nearer to any combustible partition, wall, or ceiling, than twelve inches.

The floor shall be constructed of the same material as the sides and top, or of concrete. If the floor is made of sheet metal, it must be well riveted, or bolted to frame, and covered with a rubber or cork matting.

Door. The door shall be not larger than two by five feet, and shall either be of the same construction as the booth, or be at least $\frac{3}{4}$ inch thick and clad with metal not less than No. 28 U. S. gauge. The door shall swing outward, and close automatically either by means of a spring on the outside or by a metal rope and weight.

Openings. The openings for the operator's view, or for the picture, shall be not larger than 12 inches square, and shall be provided with a gravity door, of the same construction as specified for the booth, held open by fusible links placed in series, so arranged that one of the links is suspended directly over the film when it is in the slide of the apparatus; or the door shall be so arranged as to be closed, except when held open by pressure of the operator. Such door shall not be blocked or held open in any manner except as here described.

Ventilation. Each booth shall be provided with a metal ventilating pipe not less than 12 inches in diameter, extending outside of the building.

WAUKEGAN BUILDING CODE

If a standard fire window is provided not less than four square feet in area, connecting with the outside air, and opening not less than one-half, then the ventilating pipe may be omitted. In a private assembly hall where the picture machine is operated only occasionally and for short periods of time, the ventilating pipe may be omitted.

Electric Wiring. All electric wiring in the booth shall have an approved slow burning insulation. Each lamp connected with a picture machine shall be provided with a separate switch located within the booth.

Machine. Every machine shall be provided with feed and take-up reels in metal receiving boxes with riveted or flanged joints. A shutter shall be placed in front of the condenser, arranged so as to be closed except when held open by the operator, or by some other device that will insure the immediate dropping of the shutter when operation of the machine is stopped.

Films, etc. Magazines shall be used for receiving and delivering the films during the operation of the machine. Films not in the machine shall be kept in metal boxes with tight fitting covers when in the booth. No combustible substance of any sort shall be permitted in the booth, except the films used in operation. No smoking shall be permitted in any booth.

Temporary Booths. Every temporary booth shall be of approved design, conforming as far as possible to the requirements for permanent booths. Every booth used for more than three consecutive performances in one location will be considered a permanent booth.

Part VII

School Buildings, Libraries and Museums

The requirements of the following sections apply to buildings of this classification only.

For other general requirements, see Parts I to IV.

Section 76. Classification

This classification includes all public, parochial, and private schools, colleges, academies, seminaries, libraries, museums and art galleries; including all buildings or parts of buildings used for the purpose of acquiring knowledge.

Section 77. Height and Class of Construction

Maximum Height. No building which accommodates primary or grammar grades, or pupils averaging 14 years old or less, shall be more than three stories high, nor shall the topmost floor level be more than 35 feet above the grade at any outside door.

No building which is used as a high school, or which accommodates pupils averaging 18 years old or less, shall be more than four stories high, nor shall the topmost floor level be more than 48 feet above the grade at any outside door.

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Class of Construction. Every building which is more than one story high shall be of fireproof construction.

Buildings not more than one story high may be of ordinary mill or fireproof construction.

First Floor Fireproof. In all one-story buildings the floor shall be of fireproof construction, except that floor panels and non-bearing partitions may be of protected construction. (See Section 11).

Subdivisions and Fire Stops. Every building of this classification which is built in connection with a building of a lower grade of construction, shall be separated from such other building by standard fire walls, and all communicating openings shall be protected by standard fire doors. If such openings are used as a means of egress, they shall be kept normally open during the occupancy of the building.

In primary and grammar schools, the girls' and boys' portions of the basement shall be separated by a fireproof partition in which there shall be no opening except a door for the use of the janitor, kept normally closed.

Section 78. Exposure and Courts

No wall containing windows which light a school or classroom shall be less than 30 feet away from any opposite building, structure or lot line, or opposite court wall; except that the distance from such opposite court wall may be reduced to not less than 20 feet provided light rays at an angle of 45 degrees are not thereby obstructed from entering the entire upper half of any such window.

Section 79. Exits

Number, Location, and Type. The number and location of exits shall be such that, in case any exit or passageway is blocked at any point, some other exit will still be accessible, through public passageways, from every classroom, and from every other room used by the public or by the occupants generally.

In a one-room building only one exit will be required. In a one-story, two-room building only one exit will be required, provided all basement partitions are of incombustible material and the boiler room door is a standard fire door.

At least one-half of the required exits, in buildings of more than one story, shall be stairways (Section 20). The remaining exits shall be either stairways, or horizontal exits (Section

WAUKEGAN BUILDING CODE

21) ; or fire escapes may be used as exits from floors which are not more than 40 feet above grade. All fire escapes on buildings which accommodate more than 100 persons above the first floor shall be "B" fire escapes.

In every building which accommodates more than 120 persons above the first floor, there shall be at least two stairways. In buildings of more than two stories, the stairways shall be enclosed as in Section 20.

Closets shall not be placed below non-fireproof stairways.

Handrails shall be provided on both sides of all exit stairs used by pupils.

Basement stairways which lead to the first floor shall be separated by standard fireproof partitions (Section 19) from all parts of the basement which are used for general storage or for the storage of inflammable material. At least one basement exit shall open directly to the outside.

Total Width. The total width of exits from any floor shall be not less than the following rates, based on the total number of persons accommodated on such floor and on the floors above:

Non-fireproof buildings, 40 inches per 100 persons.

Fireproof buildings, 30 inches per 100 persons.

If the stairways are enclosed and an approved automatic sprinkler system is provided in the basement, such width may be reduced as in Section 49.

Standard fire escapes (Section 22) may be used for not to exceed one-third of the above total widths, subject to the limitations given in "Number, Location and Type."

The capacity of a school building shall be established by the actual number of seats in rooms where such are used, or by the number of persons accommodated. The capacity of a library, museum, or art gallery shall be established by allowing to each person 100 square feet of the total floor area of the building, excluding stairways and elevators.

Exit Doors. Exit doors shall be as required in Section 23, except that they shall be not less than two feet eight inches wide if used by children under 14 years. The aggregate width of exit doors shall be as required in this section under the heading "Total Width." No single door or leaf of a double door shall be more than four feet wide. No revolving door shall be considered as a required exit from a building used by persons under 18 years of age.

Passageways. Corridors and passageways shall be so designed as to prevent congestion and confusion and shall be provided with windows and artificial light so as to be kept well lighted while the building is occupied.

The minimum unobstructed width of corridors and passageways which are used by the public or by the occupants generally shall be determined the same as the width of stairways and shall

in no case be less than four feet. Corridors and passageways serving as a means of egress shall be at least equal in combined width to the required width of the stairways or passageways leading to them.

Section 80. Scuttle

Every building more than one story in height shall have a permanent means of access to the roof from the inside. The opening shall be not less than 20x30 inches and there shall be a permanent ladder or stairway leading thereto.

Section 81. Rooms, Windows and Lights

Floor Space, Height, Glass Area, Lights. The minimum floor space of school or classrooms shall be:

For primary grades, 12 square feet per person.

For grammar grades, 14 square feet per person.

All others, 16 square feet per person.

All class recitation and study rooms (not including manual training or domestic science rooms) shall be at least 12 feet high in the clear. All other rooms shall be at least eight feet high in the clear.

Windows shall be placed either at the left or at the left and rear of pupils when seated. The tops of windows (except in libraries, museums and art galleries) shall not be placed more than eight inches below the minimum ceiling height as established in the preceding paragraph.

In study, class, recitation and laboratory rooms there shall be at least one square foot of glass surface (windows and skylights) for every six square feet of floor surface, if the room is lighted from the left side only. If lighted from the rear as well as from the left, the glass area shall be at least one-fifth of the floor area.

All windows shall be placed in the exterior walls of the building; except that halls, corridors, stock and supply chests may be lighted by ventilated skylights or by windows placed in interior walls or partitions. Museums, libraries and art galleries may be lighted by skylights.

The width of all study, class and recitation rooms (measuring at right angles to the glass surface) when lighted from one side only shall not exceed two and one-fourth times the height of the window head above the floor.

Each classroom shall be large enough to accommodate forty-five pupils and shall be at least 23 feet wide by 32 feet long.

Eight feet shall be reserved at the end of the room for the use of the teacher. The corresponding wall space may conveniently be provided with a blackboard to contain programs, etc. The teacher's desk shall be placed at the end of the room and not on the long side.

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Window sills shall be from 36 to 42 inches above the floor; for grades above the fourth, such height shall be 42 inches.

At the front of the room, eight feet of blank wall shall be left between the front corner and the first window. In classrooms lighted from the side only, this blank wall may be reduced to four feet; the first window shall then be provided with shade for use on bright days. Windows shall extend as close as possible to the rear corner.

Outlets for at least four electric lights shall be provided for each room of standard size.

Blackboards shall be from 24 inches (for primary grades) to 30 inches (for upper grades) above the floor, and from 36 to 48 inches high. A wide aisle shall be provided next to all blackboards.

Window Shades. Classroom windows shall be equipped with window shades adequate for the purpose of excluding direct sunshine or excessively bright light from the sky.

These shades must perform several functions, namely, the diffusion of direct sunlight, the control of illumination to obtain reasonable uniformity, the elimination of glare from the visible sky and the elimination of reflected glare from the blackboards. Each window shall be equipped with two shades operated by double rollers placed near the level of the meeting rail. (Shades so placed may be raised or lowered from the middle, which provides flexibility for shading and diffusing the light.) The material of the shade (preferably yellow or tan colored) must be sufficiently translucent to transmit a considerable percentage of the light while at the same time diffusing it.

An alternate method of shading that will be permitted consists of two independent sets of shades at each window. The one, a translucent shade, shall roll from the top down; the other, a very dark, heavy shade (preferably green) shall roll from the bottom upward.

Basement Rooms. No class, recitation, or study room (not including manual training or domestic science rooms) shall have its floor more than two feet below the adjoining grade. Manual training and domestic science rooms, toilet rooms, and other rooms used by pupils (not including playrooms) shall have ceiling at least four feet above grade. The walls and floor of every basement room used by pupils or students shall be waterproof and dampproof.

Section 82. Assembly Halls

A room which seats or accommodates 100 or more persons is governed by the requirements of Part VI, Theatres and Assembly Halls, except as follows:

The minimum width of any exit doorway used by children under 14 years of age may be two feet eight inches (instead of

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three feet four inches); but in any case the aggregate width of such doorways shall be in accordance with Part VI.

Assembly halls in schools shall be placed on the first floor, to avoid the danger of panic.

Section 83. Seats, Desks and Aisles

Seats, chairs and desks (except those used by teachers) in class, recitation, or study rooms seating more than 50 persons shall be securely fastened to the floor; or not less than four seats (or two seats and two desks) shall be fastened together.

Class and schoolrooms shall have aisles along all walls.

In primary rooms, intermediate aisles shall be not less than 17 inches, and wall-aisles not less than two feet four inches in width.

In grammar rooms, intermediate aisles shall be not less than 18 inches and wall aisles not less than two feet six inches in width.

In high school rooms and in all other class and schoolrooms, intermediate aisles shall be not less than 20 inches and wall aisles not less than 3 feet in width.

Assembly hall seats and aisles shall conform to the requirements for assembly halls (Section 64 and 65).

Section 84. Boiler and Furnace Room

In buildings of more than one story all boiler or furnace rooms, fuel rooms and laundries shall be enclosed (together with breaching) with fireproof floor and ceiling and with incombustible walls at least 8 inches thick (or 5 inches thick if of reinforced concrete) with all openings protected by standard fire doors. Such boiler or furnace shall be separated as effectively as possible, either by distance or by partitions and doors, from all stairways leading to the first floor, and especially from stairways which lead continuously to the upper floors.

Section 85. Toilet Rooms

School buildings shall have the following sanitary equipment:

One water-closet for every 20 females or fraction except for grammar and primary grades, where there shall be one water-closet for every 15 females or fraction.

One water-closet and one urinal for every 40 males or fraction, except for grammar and primary grades, where there shall

be one water-closet and one urinal for every 30 males or fraction.

A drinking fountain and sink shall be installed in each story and basement, for each 6,000 square feet of floor area, or fraction. Drinking fountains shall not be installed in toilet rooms.

One washbowl shall be provided for every two closets or urinals.

(See also Section 39.)

Section 86. Ventilation

All parts of the building generally used by the public or the occupants, except the corridors, passageways and stairways, shall be provided with fresh air at the rate of at least 1,200 feet (cubic) per person per hour. The fresh air shall be taken from the outside of the building and no vitiated air shall be reheated unless washed by a mechanical air washer of approved design; in such case not less than one-third of the required air shall be taken from the outside.

Where no fan is provided, the area of heat flues for classrooms shall be at least $1/200$ of the floor area and the area of the cold air inlet, also of vent flues, shall be at least $1/250$ of the floor area. If no fan is provided and steam heat is used there shall be at least 160 square feet of radiating surface at the base of the fresh air flue for each room which will accommodate 40 pupils, and corresponding amounts for larger or smaller rooms. Every heating plant shall include adequate provisions for humidifying the air.

Foul air outlets shall be placed in the wall, flush with the floor and not provided with gratings. Fresh air inlets shall be $7\frac{1}{2}$ or 8 feet above the floor. Floor registers are not recommended; registers for warming the feet may be placed in the baseboards. Fresh air shall be taken from the outside through a fresh air room and not admitted directly from the outside. For heating the building while unoccupied, a return flue may be provided with wing register in the wall (not the floor).

In gravity heating and ventilating systems the vent flue shall not open into the attic but shall be carried through the roof. Where a fan is used the flues may open into the attic provided the attic has a tight floor and sufficient ventilation through the roof is provided.

The heating and ventilating system should be considered as a part of the general design, and should be laid out by, or in collaboration with, the architect. The contract for such systems should not be let until the general design has been worked out.

The heating and ventilating systems must be subject to a satisfactory test during cold weather, the city meanwhile withholding 25 per cent of the contract price or requiring an equivalent bond.

WAUKEGAN BUILDING CODE

Section 87. Lighting

Artificial Lighting. Each classroom of standard size (32 feet long by 23 feet wide) shall be equipped with at least four artificial lighting units symmetrically spaced.

At least one circuit of 660 watts capacity shall be supplied to each standard classroom.

Section 88. Standpipes and Fire Extinguishers

(For standard exterior standpipes see Section 22.)

In every building which is more than one story high and which is not provided with interior standpipes, standard chemical fire extinguishers (Section 25) shall be provided to each 3,000 square feet of floor area or fraction in non-fireproof buildings, or one to each 8,000 square feet of floor area or fraction in fireproof buildings; but there shall be at least one fire extinguisher on each floor including basement. All fire extinguishers shall be prominently exposed to view and always accessible.

Automatic sprinklers (Section 25) will be required in all parts of the basement where combustible material is likely to be stored.

Section 89. Fire Alarms

Every building two stories or more in height shall be provided with a proper alarm or gongs which can be operated from any story, including basement, and can be heard throughout the building. Such alarm system shall be tested at least once a week.

Note on motion picture stages and booths.

(For motion picture booths and stages in schools see Section 58).

PART VIII

Dwellings, Apartment Houses, Hotels and Places of Detention

The following requirements apply to buildings of this classification only.

For other general requirements, see Parts I to IV. For rooms which accommodate more than 100 persons, see Part VI, Theatres and Assembly Halls.

Section 80. Classification

Dwellings. This classification includes every building or part of a building occupied as a residence by one or two families living independently, or occupied by one such family and also used for business purposes.

Apartment (Tenement Houses.) This classification includes every building or part of a building occupied as the residence of three or more families living independently, or occupied by two such families and also used for business purposes.

Hotels and Places of Detention. This classification includes all hotels, lodging and boarding houses, clubhouses, dormitories, convents, hospitals, asylums, jails and other places of detention, including every building or part of a building used for sleeping or lodging purposes by three or more persons not members of a family.

Minimum Size for Residence Use: Size of Rooms. Every building hereafter erected or converted for residence use shall have a number of rooms (exclusive of closets, bathrooms, attics and storerooms) equal to or exceeding the number of regular occupants of the building. Every such building shall have at least one living room to contain not less than 120 square feet of area and every room used for sleeping purposes shall have an area of not less than eighty square feet of floor area and the ceiling height shall be not less than eight feet from the floor line of said room. Door and window height shall not be less than six (6) feet eight (8) inches, and said rooms shall have a window area of not less than one-tenth of the floor area. Windows must be constructed in such a way as will permit their being opened to half of their area.

Foundation for Dwellings. All buildings or parts thereof to be used as dwelling or for human habitation hereafter erected in the City of Waukegan, shall be erected upon solid foundations of stone, brick, tile or concrete and shall be carried up to at least the elevation of the lower edge of the first floor joists and the footings shall not be less than four (4) feet below the finished surface of the ground.

Section 91. Height and Class of Construction and Fire Stops

Fireproof Construction. All places of detention, where persons are confined by locked doors or barred windows, shall be of fireproof construction (Section 10).

Hospitals and benevolent institutions of two or more stories in height shall be of fireproof construction.

All other buildings in this classification four or more stories in height shall be of fireproof construction.

Non-Fireproof Construction. Buildings of this classification (other than hospitals, benevolent institutions and places of detention) two or three stories high may be of fireproof, mill or ordinary construction, except that in three-story buildings the first floor and all members supporting the same shall be of fireproof construction, and outside the fire limits two-story dwellings may be of frame construction.

All buildings in this classification (other than places of detention) one-story in height may be of fireproof, mill, ordinary or frame construction, except that no frame building may be constructed within the fire limits.

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whose first story is used for a garage, the first story ceiling shall be of fireproof construction.

In three-story buildings whose first story is used for business purposes, the ceiling shall be of fireproof construction (See Section 19).

Room Containing Inflammable Material. Every room or apartment which is used for a carpenter or paint shop, or other equally inflammable material, shall be enclosed with fireproof ceiling and floor and with incombustible walls at least eight inches thick (or five inches thick if of reinforced concrete) with all openings protected by standard fire doors.

Corridor and Dividing Partitions. In every three-story building which has more than one apartment or eight rooms on any floor, the public passageways shall be enclosed with fireproof or semi-fireproof partitions (Section 19); if there is more than one apartment on any floor, such apartments shall be separated by such partitions; if there are more than eight rooms on any floor, they shall be divided by such partitions into groups of not more than eight rooms each.

Section 92. Yards

Behind every apartment house, the rear of which does not abut on an alley or street, there shall be a yard across the entire width of the lot, open and unobstructed from the ground to the sky. The width of the yard behind a two story building shall be either:

(1) At least 5 feet of unobstructed width; or

(2) At least 10 feet from the rear lot line, to the building line of which at least 3 feet shall be obstructed, and the remainder may be occupied by an open (or screened) porch.

For apartment houses of more than two stories, the unobstructed width of the entire yard shall be increased one foot for each additional story, except in the case of corner lots.

No apartment house shall be placed behind any other building. Every apartment house shall abut on a street and the front wall shall be at least 25 feet from the center of the street.

Section 93. Courts and Shafts

All courts and shafts for light, air, or dumbwaiter, shall be completely enclosed with fireproof or semi-fireproof partitions or walls (Section 19) except as provided below.

WAUKEGAN BUILDING CODE

In the case of a semi-fireproof partition enclosing a court of shaft in a building of not more than three stories, the fire-resisting material will only be required on the side of the partition toward the court or shaft.

In a fireproof building, an open well piercing the second (mezzanine) floor only, will be permitted. The mezzanine floor will be considered as a full story.

Walls of outer courts and lot line courts shall be constructed the same as required for outside walls.

Elevator shafts shall be designed and built in accordance with paragraph headed "Standard Fireproof Enclosure or Partition," Section 19.

(For minimum sizes, etc., of courts and shafts, see Section 29).

Section 94. Exits

Number, Location, Type. There shall be at least two exits accessible from each room or apartment, and such exits shall be at least 30 feet apart, measuring along the shortest line but not piercing any fireproof partition or wall. The number and location of exits shall be such that in case any exit or passageway is blocked at any point, some other exit will still be accessible, through public passageways, from every room or apartment; also that the entrance to each room or apartment will be not more than 50 feet distant from an exit (measuring along public passageways) if in a non-fireproof building, or 75 feet in a fireproof building.

At least one-half of the required exits, in buildings of more than one story, shall be stairways (Section 20). The remaining exits shall be either stairways, or horizontal exits (Section 21); or fire escapes may be used as exits from floors which are not more than 40 feet above grade. Every building which accommodates more than one family or eight persons above the second story shall have at least two stairways.

Fire escapes for hospitals and asylums shall be "B" fire escapes.

Stairways. In three-story buildings, all stairways shall be enclosed as in Section 20, unless the building is either fireproof or sprinklered. In three-story buildings accommodating more than two families or 15 persons above the first story, all basement stairways shall be enclosed with fireproof enclosures.

In buildings of more than three stories, all stairways shall be so enclosed, except that in fireproof buildings one stairway may be unenclosed from the first to the third (or second) floor, provided such stairway is enclosed in the third (or second) story and does not lead to the basement.

In all buildings of more than two stories, in which the first story is used for business purposes, at least one stairway shall be

WAUKEGAN BUILDING CODE

enclosed in the first story with an unpierced fireproof enclosure (Section 19) and such stairway shall not connect with the basement.

In apartment houses, outside stairways may be counted as exits if covered by a roof. If more than one family is accommodated above the second story, the stringers and other supporting members of outside stairs and platforms shall be of incombustible material; the treads and floorings, if of wood, shall be at least 1 5/8 inches thick. If more than two families are accommodated above the second story, the adjoining doors and windows shall be protected as in Section 22.

Aggregate Width. The aggregate width of exits shall be as provided in Section 49.

Exit Doors. Exit doors shall be as specified in Section 23; except that a door which is used by not more than six families or 40 persons, shall be not less than 3 feet wide and shall not be required to open outward.

Passageways. Every public passageway leading from an exit shall be at least as wide as the required width of such exit. Every public passageway leading to an exit shall be at least three feet wide. The required width shall be kept clear and unobstructed at all times.

Section 95. Lights

In every building which accommodates more than four families or thirty persons, and in every building which accommodates transients, the public passageways and stairways and exit doors shall be illumined from one hour after sunset to one hour before sunrise. This illumination shall include lights at all intersections of passageways, at all exits, and at the head and foot of every stairway. The lights at emergency exit doors shall be red lights and shall be accompanied by a sign bearing the words "exit" or "out" in plain letters.

(See also Sections 23, 35 and 36).

Section 96. Scuttle

Every building more than one story in height which accommodates more than four families or thirty persons shall have a permanent means of access to the roof from the inside. The opening shall be not less than 20x30 inches and there shall be a permanent ladder or stairway leading thereto.

Section 97. Rooms and Windows

Size and Height of Rooms. Every sleeping room shall have at least 800 cubic feet of air space. All stories above the basement must be at least eight feet high from floor to ceiling.

Basement Rooms. Every basement living or sleeping room shall be at least eight feet high from floor to ceiling, except that basement of dwellings may be seven feet high. The ceiling

WAUKEGAN BUILDING CODE

shall be at least four feet above the outside grade, except that in dwellings this height may be three feet. The walls and floor shall be damp proof and waterproof.

No rooms wherein persons are forcibly confined shall be located in a basement.

Windows. The outside windows in every sleeping or living room shall have a total area of at least one-tenth of the floor area of the room, but not less than 12 square feet. The top of at least one such window shall be not less than 6½ feet above the floor, and the upper half of it shall be made so as to open the full width. (See also Section 29).

Section 98. Laundries, Boiler and Furnace Rooms

All boiler and furnace rooms, including breaching, and all laundries and drying rooms, in all buildings accommodating transients and in hospitals, asylums and other places of detention, shall be enclosed with standard fireproof enclosures and fireproof floor and ceiling. (See also Sections 31 to 34 inclusive).

Section 99. Ventilation

Pure air shall be provided at the rate of 1,800 cubic feet per hour per person; provided the air in every public part of the building shall be changed at least twice each hour.

Section 100. Toilet Rooms

Every apartment shall have a water closet in a bathroom or separate compartment.

All other buildings of this classification shall have at least one water-closet for every 15 rooms or fraction thereof.

(See also Sections 39 and 101).

Section 101. Water Supply

In every building of this classification where city water supply is available or can be made available, there shall be at least one proper sink or washbowl with running water. In apartment houses there shall be such a sink or washbowl in each apartment.

Section 102. Repairs

Every building of this classification, and all the parts thereof shall be kept in good repair and the roof shall be kept so as not to leak and all rain water shall be so drained and conveyed therefrom as not to cause dampness in the walls or ceilings.

Section 103. Cleanliness

Every building shall be kept clean and shall also be kept free from any accumulation of dirt, filth, rubbish, garbage, or other matter in or on the same or in the yards, courts, passageways, areas or alleys connected with or belonging to the same.

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Section 104. Standpipes and Fire Extinguishers

(For exterior standpipes see Section 22).

Standard interior standpipes (Section 25) shall be provided in every building which is more than two stories high and accommodates 20 or more transients and in all hospitals, asylums and other places of detention. Not more than 75 feet of hose (Section 25) shall be attached to each standpipe at each floor level. The number and location of interior standpipes shall be such that the hose will reach at least two feet inside of each room.

In the above buildings where adequate water supply is not available, and in buildings accommodating less than 20 transients where interior standpipes are not provided, a standard fire extinguisher (Section 25) shall be placed on each floor at the head of each stairway and at each elevator or group of elevators.

Section 105. Fire Alarm

In every building which accommodates 20 or more transients, there shall be a proper alarm or gongs which can be operated from any story and can be heard throughout the building. Every such alarm system shall be tested at least once every week.

Section 106. Directions for Escape

In every room liable to be used by transients a notice shall be conspicuously posted giving complete and plain directions for reaching at least two exits.

Section 107. Special Regulations For Dwelling Houses

Previous sections in this Part (Part VIII) contain various provisions relating to dwelling houses. Section 44 contains regulations applicable to masonry walls in dwellings and other buildings. Section 45 contains regulations governing concrete walls in general, but without specific reference to dwellings. The following paragraphs of this section, which will govern the use of concrete construction in dwellings in the city of Waukegan are taken verbatim from "Recommended Minimum Requirements for Small Dwelling Construction, commonly called the Hoover Building Code" published in January, 1923 by the U. S. Department of Commerce.

WAUKEGAN BUILDING CODE

Monolithic Concrete Dwellings. Monolithic concrete construction containing not more than $\frac{2}{10}$ of 1 per cent of reinforcement shall be classed as plain concrete. Solid bearing walls shall be at least six inches thick.

Reinforcement not less than $\frac{2}{10}$ of 1 per cent, computed on a vertical height of 12 inches, shall be placed over all wall openings and at corners of the structure to prevent cracks. Floor and roof connection details shall be designed to transmit safely the vertical and horizontal loads imposed.

Hollow monolithic walls shall have not less than six inches aggregate thickness of material. Wall openings and corners shall be reinforced in the same manner as solid monolithic walls. The inner and outer parts of such walls shall be securely braced and tied together with non-corrodible ties or other means to bring them into common action. Where floor and roof systems are carried by such walls, provision shall be made for the distribution of these loads to all parts of the wall. (Note. The non-corrodible ties specified in this paragraph shall be as specified in Section 45, in the third paragraph under the heading "Concrete Walls").

Unit Construction. Precast concrete units for construction of dwellings shall be of sufficient strength, and where necessary shall be reinforced, to carry safely the loads imposed. Connections between the several parts of such structures shall be sufficiently strong and rigid to resist the vertical and horizontal forces which may be imposed.

Concrete Structural Frame with Enclosing Walls. Dwellings constructed with monolithic reinforced concrete frames cast in metal lath or other forms; and with inclosing walls of concrete plastered or shot on metal lath or of precast units carried by such frames; or having reinforced concrete bearing walls, shall be designed in accordance with standard methods of reinforced concrete design to carry safely the dead weight of the structure and the live loads which may be imposed. Inclosure or panel walls shall be of sufficient strength and rigidity to resist lateral forces and transmit them to the framework.

Height of Concrete Exterior Walls. The height of exterior concrete walls of the minimum thickness specified in this section shall be not greater than 30 feet. Where gable construction is used an additional five feet is permitted to the peak of the gable.

Floors, Floor Beams and Columns. Floors, beams and columns shall be designed in accordance with standard methods to carry safely the loads imposed.

PART IX

Enforcement, Penalty, Validity

Section 108. Enforcement of Ordinance. Penalty for Violation, Duties of Building Commissioner

The Building Commissioner is hereby instructed and empowered to enforce this ordinance and to supervise the construction, reconstruction, alteration and moving of all buildings.

Any and all persons who shall violate any of the provisions of this ordinance or fail to comply therewith, or who shall violate or fail to comply with any order or regulation made thereunder; or who shall build in violation of any detailed statement of specifications or plans submitted and approved thereunder; or any certificate or permit issued thereunder; shall severally for every such violation and noncompliance respectively forfeit and pay a penalty in the sum of not less than Twenty Five Dollars (\$25.00), nor more than Two Hundred Dollars (\$200.00). The imposition of one penalty for any violation of this ordinance shall not excuse the violation or permit it to continue; and all such persons shall be required to correct or remedy such violations or defects within a reasonable time; and when not otherwise specified each day that prohibited conditions are continued shall constitute a separate offense.

The application of the above penalty shall not be held to prevent the enforced removal of prohibited conditions, as provided in this Ordinance.

Section 109. Validity of Ordinance

If any section, paragraph, subdivision, clause, sentence or provision of this ordinance shall be adjudged by any Court of competent jurisdiction to be invalid, such judgment shall not affect, impair, invalidate or nullify the remainder of this ordinance, which shall remain in full force and effect.

Section 110. Conflicting Ordinances Repealed

All ordinances and parts of ordinances inconsistent herewith are hereby repealed.

Section 111. Date of Effect

This ordinance shall be in full force and effect from and after its passage and publication as required by law.

THEODORE H. DURST, Mayor.

Presented and read July 31, A. D. 1924.

Passed August 14, A. D. 1924.

Signed August 18, A. D. 1924.

Published August 23, A. D. 1924.

Attest: J. H. Marseilles, City Clerk.

Approved August 14, A. D. 1924.

ALBERT L. HALL,

(SEAL)

Corporation Counsel.

WAUKEGAN ZONING ORDINANCE

First Draft—May 10, 1924.

AN ORDINANCE classifying, regulating, and restricting the locations of trades and industries and the location of buildings designed for specified uses; regulating and limiting the height and bulk of buildings hereafter erected or altered; regulating and limiting the intensity of the use of lot areas, and regulating and determining the area of yards, courts, and other open spaces within and surrounding such buildings; establishing the boundaries of districts for the said purposes; and prescribing penalties for the violation of its provisions.

For the purpose of establishing and carrying into effect the several powers, duties and privileges conferred upon the City of Waukegan, in, under and by an Act of the General Assembly of the State of Illinois, approved June 28, 1921, amended June 30, 1923, and entitled: "An act to confer certain and additional powers upon City Councils in cities and Presidents and Boards of Trustees in villages and incorporated towns concerning buildings and structures, the intensity of use of lot areas, the classification of trades, industries, buildings and structures, with respect to location and regulation, the creation of districts of different classes, and the establishment of regulations and restrictions applicable thereto."

BE IT ORDAINED BY THE CITY COMMISSION OF THE CITY OF WAUKEGAN, ILLINOIS.

Section 1. Definitions.

For the purpose of this ordinance, certain terms and words are defined as follows:

Words used in the present tense include the future; words in the singular number include the plural number, and words in the plural number include the singular number; the word "building" includes the word "structure" and the word "lot" includes the word "plot."

Accessory Building: A subordinate building or portion of the main building which is located on the lot of the main building, and the use of which is clearly incidental to the use of the main building.

Alley: A public thoroughfare not over twenty (20) feet wide.

Basement Bay Windows: A story partly under ground, which, if not occupied for living purposes by other than the janitor or his family, shall not be included as a story for the purpose of height measurements.

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Block: That property abutting on one side of a street between the two nearest intersecting streets, railroad rights of way, or other natural barriers.

Boarding Houses: A building or premises where meals are served for compensation for four or more persons but not exceeding twenty (20) persons.

Building: A structure having a roof supported by uprights or walls, and separated from every other building by at least a party wall.

Building Area: The maximum horizontal projected area of a building, excluding open steps, terraces, and cornices projecting not more than thirty (30) inches.

Classification of Use Districts shall be as follows:

1. "A" Residence Districts.
2. "B" Residence Districts.
3. "C" Residence Districts.
4. Local Business Districts.
5. General Business Districts.
6. First Industrial Districts.
7. Second Industrial Districts.

The uses permitted in "A" Residence Districts shall be the highest class, and the uses permitted in the Second Industrial Districts shall be the lowest class.

Corner Lot: A lot situated at the junction of and fronting on two or more streets, and having a width not greater than sixty-six (66) feet.

Depth of Lot: The mean horizontal distance between the front and rear lot lines.

Depth of Rear Yard: The mean horizontal distance between the rear line of the building and the center line of the alley, where an alley exists, otherwise the rear lot line.

District: A section of the City of Waukegan for which the regulations governing the height, the area, or the use of buildings and premises are the same.

Family: Any number of individuals living and cooking together on the premises as a single housekeeping unit.

Height of Building: The vertical distance measured from the curb level opposite the middle of the front of the building to the highest point of the roof for flat roofs, to the deck line for mansard roofs, and to the mean height level (between eaves and

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ridge) for gable and hip roofs. Where a building is located upon a terrace or slope the height may be measured from the average ground level at the building wall.

Height of Court or Yard: The vertical distance from the lowest level of such court or yard to the highest point of any bounding wall.

Hotel: A building or premises where lodging is provided, with or without meals, for more than twenty persons.

Inner Court: An unoccupied space surrounded on all sides by walls, or by walls and a lot line.

Interior Lot: A lot other than a corner lot.

Length of Outer Court: The mean horizontal distance between the open and closed ends of the Court.

Lodging House: A building or premises where lodging is provided for compensation for five or more persons but not exceeding twenty persons.

Lot: Land occupied or to be occupied by one building and accessory buildings and uses and including open spaces required under this ordinance. A lot may be land so recorded on the Records of the Recorder of Deeds of Lake County, Illinois.

Lot Lines: The lines bounding a lot as defined herein.

Non-conforming Use: A use of a building or premises that does not conform with the regulations of the use district in which it is situated.

Outer Court: A open unoccupied space opening on a yard, street or alley.

Private Garage: A garage intended for and used by not more than four motor vehicles, of which not more than one shall be a truck of more than $\frac{1}{2}$ ton capacity, nor more than one story high.

Public Garage: Any garage not included within the definition of a private garage.

Rear Yard: An open space unoccupied (except for accessory buildings and uses) on the same lot with a main building, between the rear lines of the main building and the rear line of the lot, for the full width of the lot.

Set Back: The minimum horizontal distance between the street wall of a building and the street line.

Side Yard: An open unoccupied space on the same lot with a building between the building and the side line of the lot extending through from the front building line to the rear yard or to the rear line of the lot, where no rear yard is required.

Single Family Dwelling: A detached building having accommodations for and occupied by one family only.

Street Wall: The wall nearest to fronting on a street including sun parlors, bay windows and box porches but not including ground story porches or piazzas which are not to be enclosed thereafter. No ground story porches or piazzas not closed in

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shall be wider than eight (8) feet, unless the street wall is moved back so that the front of the open ground porch or piazza does not extend closer to the street line than an open porch or piazza eight (8) feet wide.

Two Family Dwelling: A building having accommodations for and occupied by not more than two families.

Section 2. Use Regulations

1. **Use Districts:** For the purpose of classifying, regulating and restricting the location of uses of land areas, and the location of buildings designed for specified uses, the City of Waukegan is hereby divided into seven classes of Use Districts:

1. "A" Residence Districts.
2. "B" Residence Districts.
3. "C" Residence Districts.
4. Local Business Districts.
5. General Business Districts.
6. First Industrial Districts.
7. Second Industrial Districts

as shown on the Use District Map hereto attached and expressly made a part of this ordinance, and Use Districts are hereby created in the City of Waukegan, Illinois, as the same are designated on the Use District Map hereto attached. No building shall be erected, altered, or used, and no premises shall be used for any purpose except in conformity with all the regulations herein prescribed for the Use District in which such building or premises are located.

2. **"A" Residence Districts:** In any "A" Residence District, except as hereinafter provided, no building or premises shall be used and no building shall be erected or altered except for one or more of the following uses:

1. Single Family Dwellings.
2. Schools and Colleges.
3. Parks, Recreation Buildings, and Country Clubs not conducted as a business nor for profit.
4. Farming, Truck Gardening and Nurseries.
5. Temporary Uses and Buildings for Construction Purposes, for a period not to exceed one year.
6. Accessory uses incident to the above uses, one garage for each lot, the garage not larger than to accommodate two motor vehicles of which none shall be trucks of more than $\frac{1}{2}$ ton capacity, including private gardens, professional offices, home occupations and signs advertising premises for sale or rent, but not the conduct of any retail or wholesale business or manufacture.

3. **"B" Residence Districts:** In any "B" Residence District, except as hereinafter provided, no building or premises shall be used and no building shall be erected or altered except for one or more of the following uses:

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1. Any use permitted in "A" Residence Districts.
2. Two Family Dwellings.
3. Lodging and Boarding Houses.
4. Churches and Temples.
5. Libraries and Public Museums.
6. Institutions of an Educational, Philanthropic, or Eleemosynary nature.

7. No garage shall be erected on a lot which will accommodate more than three motor vehicles of which none shall be trucks of more than $\frac{1}{2}$ ton capacity.

4. "C" Residence Districts: In any "C" Residence District, except as hereinafter provided, no building or premises shall be used and no building shall be erected or altered except for one or more of the following uses:

1. Any use permitted in "A" and "B" Residence Districts.
2. Apartment houses and Multiple dwellings.
3. Apartment hotels.
4. Clubs and Fraternity houses.
5. Hospitals.
6. Telephone Exchanges.
7. Police and Fire Department Stations.
8. Public garages not accommodating trucks of more than $\frac{1}{2}$ ton capacity.

5. Local Business Districts: In any Local Business District, except as hereinafter provided, no building or premises shall be used and no building shall be erected or altered except for one or more of the following uses:

1. Any use permitted in the Residence Districts.
2. Amusement Places.
3. Auction Rooms.
4. Bakeries, employing not more than five (5) persons.
5. Banks.
6. Barber Shops.
7. Battery Service Stations.
8. Billboards and Signs.
9. Catering Establishments.
10. Conservatories.
11. Dancing Academies.
12. Comfort Stations.
13. Dressmaking Establishments.
14. Dyeing and Cleaning Works, employing not more than five (5) persons.
15. Electric Repair Shops.
16. Employment Agencies.
17. Freight Stations.
18. Gasoline and Oil Stations.
19. Hotels.
20. Laundries employing not more than five (5) persons.

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21. Laboratories.
22. Locksmith Shops.
23. Lodge Halls.
24. Messenger or Telegraph Service Stations.
25. Millinery Shops.
26. Offices.
27. Painting and Decorating Shops.
28. Photograph Galleries.
29. Plumbing Shops.
30. Post Offices.
31. Printing Shops.
32. Public Garages.
33. Public Service Sub-stations.
34. Recreation Buildings and Structures.
35. Restaurants.
36. Roofing or Plastering Shops.
37. Sales or Show Rooms.
38. Sharpening or Grinding Shops.
39. Stores and Shops for the conduct of Retail Business.
40. Shoe Repairing Shops.
41. Studios.
42. Tailor Shops employing not more than five (5) persons.
43. Tinsmithing Shops.
44. Tire Repairing Shops.
45. Undertaking Establishments.
46. Upholstering Shops.

Any building primarily used for any of the above enumerated uses may have not more than forty (40) per cent of the floor area devoted to industry or storage purposes incidental to such primary use; provided that not more than five (5) employees shall be engaged at any time on the premises in any such incidental use.

6. General Business Districts. In any General Business District, except as hereinafter provided, no building or premises shall be used, and no building shall be erected or altered for any of the following specified trades, industries, or uses:

1. Coal, Coke, Lumber, Wood or Building Material Storage Yard.
2. Carting, Express, Hauling or Storage Yard.
3. Contractor's Plant or Storage Yard.

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4. Storage, Bailing, Packing or Treatment of Scrap Paper, Iron, Bottles, Rags, or Junk.
5. Brass, Copper, Iron or Steel Works or Foundry.
6. Electrical Central Station Power Plant.
7. Gas Manufacture, or Storage in excess of 10,000 cu. ft.
8. Planing Mill or Saw Mill.
9. Railroad Yards or Round Houses.
10. Stone Yards or Monument Works.

11. Any manufacture or treatment whatsoever, except such light manufactures as are carried on within entirely enclosed buildings and which create no objectionable noise, odor, smoke, fumes, vapor, dust or gas. Nothing in this section shall be deemed to exclude a newspaper or printing establishment, a car barn, or an electric sub-station from a General Business District.

No use permitted in a residence district shall be excluded from a General Business District.

7. First Industrial Districts. In any First Industrial District, except as hereinafter provided, no building or premises shall be used, and no building shall be erected or altered for any of the following specified trades, industries or uses:

1. Abattoirs.
2. Acetylene Gas Manufacture.
3. Acid Manufacture.
4. Ammonia, Bleaching Powder or Chlorine Manufacture.
5. Arsenal.
6. Asphalt Manufacture or Refining.
7. Blast Furnace.
8. Boiler Works.
9. Brick, Tile or Terra Cotta Manufacture.
10. Candle Manufacture.
11. Celluloid Manufacture or Treatment.
12. Coke Ovens.
13. Crematory.
14. Creosote Treatment or Manufacture.
15. Disinfectant, Insecticide or Poison Manufacture.
16. Distillation of Bones, Coal, or Wood.
17. Dyestuff Manufacture.
18. Emery Cloth and Sand Paper Manufacture.
19. Fat Rendering.
20. Fertilizer Manufacture.
21. Fish Smoking and Curing.
22. Forge Plants.
23. Gas (illuminating or heating) Manufacture.
24. Glue Size or Gelatine Manufacture.
25. Gunpowder Manufacture or Storage.
26. Fireworks or Explosive Manufacture or Storage.
27. Incineration or Reduction of Garbage, Dead Animals, Offal or Refuse, except for Municipal purposes.

WAUKEGAN ZONING ORDINANCE

28. Iron, Steel, Brass, or Copper Works or Foundries.
29. Lamp Black Manufacture.
30. Lime, Cement or Plaster of Paris Manufacture.
31. Oil Cloth or Linoleum Manufacture.
32. Oiled Rubber or Leather Goods Manufacture.
33. Ore Reduction.
34. Paint, Oil Shellac, Turpentine or Varnish Manufacture.
35. Paper or Pulp Manufacture.
36. Petroleum Refining or Storage.
37. Potash Works.
38. Printing Ink Manufacture.
39. Pyrolin Manufacture or the Manufacture of Articles therefrom.
40. Round House.
41. Rock Crusher.
42. Rolling Mill.
43. Rubber, Caoutchouc or Gutta Percha Manufacture or Treatment.
44. Salt Works.
45. Sauerkraut, Sausage or Bologna Manufacture.
46. Ship Yard.
47. Shoe Blacking Manufacture.
48. Smelters.
49. Soda and Compound Manufacture.
50. Stock Yards.
51. Stone Mill or Quarry.
52. Stove Polish Manufacture.
53. Sulphuric, Nitric, Hydrochloric or Picric Acid Manufacture.
54. Tallow, Grease, or Lard Manufacture or Refining.
56. Tar Distillation or Manufacture.
57. Tar Roofing or Waterproofing Manufacture.
58. Tobacco (chewing) Manufacture or Treatment.
59. Vinegar Manufacture.
60. Wool Pulling or Scouring.
61. Yeast Plant.
62. And in general those uses which have been declared a nuisance in any court of record or which may be obnoxious or offensive by reason of the emission of odor, vapor, dust, smoke, gas or noise.

8. Second Industrial District. In any Second Industrial Districts any premises or building may be used for any purposes whatsoever, provided the present or hereafter adopted ordinances of the City of Waukegan, including the ordinances, regulating the erection and operation of nuisances, are complied with.

9. Non-Conforming Uses. The lawful use of a building or premises existing at the time of the adoption of this ordinance may be continued, although such use does not conform with the provisions hereof, and such use may be extended throughout the

WAUKEGAN ZONING ORDINANCE

building. A non-conforming use may be changed to a use of the same or higher classification according to the provisions of this ordinance. Whenever a District shall be hereafter changed, any then existing non-conforming use in such changed district may be continued or changed to a use of a similar or higher classification, provided all other regulations governing the new use are complied with. Whenever a non-conforming use of a building or premises has been discontinued, or changed to a higher classification or to a conforming use, such use shall not thereafter be changed to a use of a lower classification.

Section 3. Area Regulations

1. **Area Districts.** For the purpose of regulating and limiting the height and bulk of buildings hereafter erected or altered, regulating and limiting the intensity of the use of lot areas, and regulating and determining the areas of yards, courts, and other open spaces within and surrounding such buildings, the City of Waukegan, Illinois, is divided into four classes of Area Districts:

1. "A" Area Districts.
2. "B" Area Districts.
3. "C" Area Districts.
4. "D" Area Districts

as shown on the Area District Map attached hereto and expressly made a part of this ordinance, and Area Districts are hereby created in the City of Waukegan, Illinois, as the same are designated on the Area District Map hereto attached. No building shall be erected, altered, or used, and no premises shall be used except in conformity with all the regulations herein prescribed for the Area District in which such building or premises are located.

"A" Area Districts:

(a) **Building Area:** No building with its accessory building shall be erected or altered so as to occupy more than forty-five per cent of the area of a corner lot nor more than thirty-five per cent of the area of an interior lot.

(b) **Number of Families Housed:** No dwelling shall hereafter be erected or altered to accommodate or make provision for more than seven families on any acre of land or more than a proportional number of families on a fractional part of any acre of land. The maximum number of families which may hereafter be housed on any plot of ground shall not exceed the integral number obtained by multiplying the acreage of such plot by seven. The limitations imposed by this section shall, however, not prohibit the use for a single family dwelling of any lot duly recorded at the time of the passage of this ordinance and containing an area of less than one-seventh of an acre.

(c) **Rear Yards:** Every building shall have a rear yard, the depth of which shall not be less than twenty per cent of the

The image displays four distinct floor plans, each with its own set of dimensions and room labels:

- Plan A (Single Family):** Located in the bottom right, this plan shows a large rectangular building with a central section labeled "S. PORCH" and a "P. PORCH". It includes several rooms with dimensions such as 30, 20, 10, 12, 18, 16, 14, 12, 10, 8, 6, 4, 2, 1, and 1/2. The overall dimensions are 140 by 50.
- Plan B (Two Family):** Located in the bottom left, this plan shows a building with a central section labeled "S. PORCH" and a "P. PORCH". It includes several rooms with dimensions such as 30, 20, 10, 12, 18, 16, 14, 12, 10, 8, 6, 4, 2, 1, and 1/2. The overall dimensions are 160 by 50.
- Plan C (Apartments):** Located in the top right, this plan shows a building with a central section labeled "S. PORCH" and a "P. PORCH". It includes several rooms with dimensions such as 30, 20, 10, 12, 18, 16, 14, 12, 10, 8, 6, 4, 2, 1, and 1/2. The overall dimensions are 150 by 50.
- Plan D (General and Local Business):** Located in the top left, this plan shows a building with a central section labeled "S. PORCH" and a "P. PORCH". It includes several rooms with dimensions such as 30, 20, 10, 12, 18, 16, 14, 12, 10, 8, 6, 4, 2, 1, and 1/2. The overall dimensions are 150 by 50.

103

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depth of the lot nor less than fifteen feet in any case, but it need not exceed twenty-five feet in any case.

(d) **Side Yards:** Two side yards shall be provided on every lot. The width of each side yard shall not be less than six feet. The sum of the widths of the two side yards shall in no case be less than twenty per cent of the width of the lot.

(e) **Inner Courts:** The least dimension of an inner court at its lowest level shall be not less than ten feet. In no case shall such least dimension be less than one-third the height of the building. The minimum area of an inner court shall not be less than twice the square of its required least dimension.

(f) **Outer Courts:** The least dimension of an outer court at its lowest level shall be not less than ten feet. In no case shall such least dimension be less than one-third the height of the building.

3. "B" Area Districts:

(a) **Building Area:** No building with its accessory buildings shall be erected or altered so as to occupy more than fifty per cent of the area of an interior lot nor more than sixty per cent of the area of a corner lot.

(b) **Number of Families Housed:** No building or series of buildings shall hereafter be erected or altered to accommodate or make provision for more than twenty families on any acre of land nor more than a proportional number of families on a fractional part of any acre of land. The maximum number of families which may hereafter be housed on any plot of ground shall not exceed the integral number obtained by multiplying the acreage of such plot by twenty.

(c) **Rear Yards:** Every building shall have a rear yard the depth of which shall be not less than fifteen per cent of the depth of the lot nor less than ten feet in any case, but it need not exceed twenty feet in any case.

(d) **Side Yards:** Two side yards shall be provided on every lot and the width of any side yard shall be not less than one-tenth the width of the lot nor less than one-eighth the height of the building.

(e) **Inner Courts:** The least dimension of an outer court at its lowest level shall not be less than eight feet. In no case shall such least dimension be less than one-fourth the height of

WAUKEGAN ZONING ORDINANCE

the building. The minimum area of an inner court shall be not less than twice the square of its required least dimension.

(f) **Outer Courts:** The least dimension of an outer court at its lowest level shall be not less than eight feet. In no case shall such least dimension be less than one-fourth the height of the building.

4. "C" Area Districts:

(a) **Building Area:** No building with its accessory buildings shall occupy more than seventy-five per cent of the area of an interior lot nor more than eighty-five per cent of the area of a corner lot, provided that for buildings arranged, designed and used for industrial purposes only those area regulations shall be applied at the sill level of the second story windows but not more than twenty feet above the curb level.

(b) **Number of Families Housed:** No dwelling, apartment, or apartment house shall hereafter be erected or altered to accommodate or make provision for more than fifty families on any acre of land nor more than a proportional number of families on a fractional part of any acre of land. The maximum number of families which may hereafter be housed on any plot of ground shall not exceed the integral number obtained by multiplying the acreage of such plot by fifty.

(c) **Rear Yards:** Every building shall have a rear yard the depth of which shall be not less than ten per cent of the depth of the lot nor less than ten feet in any case, but it need not exceed fifteen feet in any case.

(d) **Side Yards:** No side yard wherever provided shall be less than four feet wide nor less in width than one-tenth the height of the building.

(e) **Outer Courts:** The least dimension of an outer court at its lowest level shall be not less than six feet. In no case shall such least dimension be less than one sixth of the building height.

(f) **Inner Courts:** The least dimension of an inner court at its lowest level shall be not less than six feet. In no case shall such least dimension be less than one-fifth the height of the building. The minimum area of an inner court shall be not less than twice the square of its required least dimension.

5. "D" Area Districts:

No building or part of a building shall be erected or altered for residential purposes except in conformity with the area regulations prescribed for "C" Area Districts, provided, however, that the limitations relating to the per cent of lot area which buildings may occupy, and the size of courts and yards required, shall be applied at the sill level of the second story windows, but not more than twenty feet above the curb level. The regulations prescribed in the subsequent paragraphs of this section

WAUKEGAN ZONING ORDINANCE

shall be deemed to apply only to buildings used exclusively for some purpose other than that of a dwelling or an apartment house.

(a) **Building Area:** No building with its accessory buildings shall occupy at the sill level of, the second story windows not higher than twenty feet above the curb level, more than ninety per cent of the area of an interior lot. A building situated on a corner lot may occupy the entire lot.

(b) **Rear Yards:** Every building other than one situated on a corner lot shall have a rear yard, the depth of which at the sill level of the second story windows but not more than twenty feet above the curb level, shall be not less than ten per cent of the depth of the lot. The rear yard at such level need not, however, exceed ten feet on lots more than one hundred feet deep. But in no case shall such least dimension be less than one-tenth of the height of the building.

(c) **Side Yards:** Wherever a side yard is provided, its width at its lowest level shall be not less than three feet nor less than one-twelfth the height of the building.

(d) **Inner Courts:** The least dimension of an inner court at its lowest level shall be not less than six feet. In no case shall such least dimension be less than one sixth the height of the building. The minimum area of an inner court shall be not less than twice the square of its required least dimension.

(e) **Outer Courts:** The least dimension of an outer court at its lowest level shall be not less than five feet. In no case shall such least dimension be less than one-eighth the height of the building.

6. Building Line Set Back:

No building shall be erected or altered in an "A" Residence District so as to place its street wall nearer than thirty feet from the street line; no building shall be erected or altered in a "B" Residence District so as to place its street wall nearer than twenty feet from the street line; and no building shall be erected or altered in a "C" Residence District so as to place its street wall nearer than ten feet from the street line; provided that:

(a) Where a block is occupied or partially occupied by permanent buildings which existed in the block at the time of the passage of this ordinance, the average of the distances of the street walls of such buildings from the street line, shall be the established building line, but no future building in a "B" residence District shall be required to set back more than twenty feet, nor in any "C" Residence District more than fifteen feet.

(b) Where a lot on which a building line set back is required adjoins a lot where a smaller set back or no set back is required, the buildings on first mentioned lot, for a distance of not more than fifty (50) feet from the District line, shall be required to

WAUKEGAN ZONING ORDINANCE

observe only one-half the set back that would otherwise be required for first mentioned lot.

(c) Where the rear line of any lot forms part of the front half of the side line of an adjacent lot, such adjacent lot shall be required to observe a set back of only one-half the established set back of the remaining lots fronting on the same street with it in the same block, but this set back shall not be required to be greater than ten feet in any case.

(d) Where the continuation of the front line of one or more lots, as defined herein, located in any "Business" or "Industrial" district forms the front line of one or more lots located in any "A", "B", or "C" Residential district in the same block, any buildings constructed, replaced, altered, or moved on first said lot or lots, shall conform to the building line set back required for the residential lots, but such set back shall not be required to be more than twenty feet in any case.

(e) Where owners of all properties in a block petition in writing for the establishment of a building line within that block, which building line differs from that which would otherwise be established by the provisions of the section, the Board of Appeals may, after due notice and hearings, recommend to the Council the adoption of the building line proposed by the petitioners.

7. Area District Exceptions and Regulations:

The foregoing requirements in the area districts shall be subject to the following exceptions and regulations:

(a) For purposes of the area regulations a semi-detached dwelling, group house, or row house in a "B" or "C" Residence District may be considered as one building and occupying one lot.

(b) Buildings on through lots and running through from street to street may waive the requirements for a rear yard when complying with the percentage of lot occupancy by furnishing other open spaces in lieu of such required rear yard.

(c) In computing the depth of a rear yard or the width of a side yard or open court for any buildings where such yard or court opens on to an alley or street, one-half of such alley or street may be assumed to be a portion of the yard or court, except that in "A" and "B" Area Districts every corner lot shall maintain a side yard in conformity with the side yard requirements for those districts.

(d) Every part of a required yard or court shall be opened from its lowest point to the sky unobstructed, except for the projections of sill, belt courses, cornices and ornamental features not to exceed twelve (12) inches.

(e) Open or lattice enclosed fire escapes, fireproof outside stairways and solid floored balconies opening upon fire towers, projecting into a yard not more than five (5) feet or into a court

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not more than three and one-half (3½) feet, and the ordinary projections of chimneys and flues shall be permitted where same are so placed as not to obstruct the light and ventilation.

(f) No yard, court, or other open space, provided about any building for the purpose of complying with the provisions of these regulations shall again be used as a yard, court, or other open space for another building.

(g) In "A" and "B" residence Districts no accessory building shall be located within ten feet of its rear or side lot line where either such line forms part of the front half of the side line of an adjacent lot, but the foregoing shall not prohibit the erection of an accessory building fifty feet or more from any street bounding the block.

Section 4. Height Regulations:

Height Districts: For the purpose of regulating and limiting the height of buildings hereafter erected or altered, the City of Waukegan, Illinois, is hereby divided into five classes of Height Districts:

1. "A" Height Districts, 35 feet,
2. "B" Height Districts, 45 feet,
3. "C" Height Districts, 60 feet,
4. "D" Height Districts, 100 feet, as shown on the Height

District Map attached hereto and expressly made a part of this ordinance, and height districts are hereby created in the City of Waukegan, Illinois, as the same are designated on the Height District Map hereto attached. No building shall be erected, altered or used, and no premises shall be used for any purpose except in conformity with all the regulations herein prescribed for the Height District in which such building or premises are located.

1. **"A" Height Districts.** In "A" Height Districts no building shall be erected or altered to a height in excess of thirty-five (35) feet, or two and a half stories.

2. **"B" Height Districts:** In "B" Height Districts no building shall be erected or altered to a height in excess of forty-five feet, or three stories.

3. **"C" Height Districts:** In "C" Height Districts no building shall be erected or altered to a height in excess of sixty feet, or five stories.

WAUKEGAN ZONING ORDINANCE

4. **"D" Height Districts:** In "D" Height Districts no building shall be erected or altered to a height in excess of one hundred feet or eight stories, but every building over six stories in height shall, above the floor line of the seventh story, have its outer walls set back at a ratio of one foot set back for each two feet of rise.

5. Height Districts Exceptions:

The foregoing requirements in the height regulations shall be subject to the following exceptions:

(a) Public or semi-public buildings, churches, hospitals, sanitariums, or schools in "A" or "B" Height Districts may be erected to a height not exceeding sixty (60) feet, provided they are set back from each property line at least one foot for each foot of additional building height above the limit for the district in which they are located.

(b) Dwellings in the "A" Height Districts may be increased in height by not more than ten (10) feet when two (2) side yards of not less than fifteen (15) feet each are provided. Such dwellings, however, shall not exceed three (3) stories in height.

(c) Chimneys, cooling towers, elevator bulkheads, fire towers, monuments, pent houses, stacks, stage towers or scenery lofts, tanks, water towers, ornamental towers and spires, wireless towers, or necessary mechanical appurtenances may be erected to any height in accordance with other existing or hereafter adopted ordinances of the City of Waukegan.

Section 5. Boundaries of Districts.

Where uncertainty exists with respect to the boundaries of the various districts as shown on the maps accompanying and made a part of this ordinance the following rules shall apply:

(a) The district boundaries are either streets or alleys, unless otherwise shown, and where the designation on the maps accompanying and made a part of this ordinance indicating the various districts, are approximately bounded by street or alley line, said street or alley shall be construed to be the boundary of such district.

(b) Where the district boundaries are not otherwise indicated and where the property has been or may hereafter be divided into blocks and lots, the district boundaries shall be construed to be lot lines, and where the designation on the maps accompanying and made a part of this ordinance indicating the various districts are approximately bounded by lot lines, said lot lines shall be construed to be the boundary of such district, unless said boundaries are otherwise indicated on the maps.

(c) In subdivided property, the district boundary lines on the maps accompanying and made a part of this ordinance, shall be determined by use of the scale contained in such maps.

WAUKEGAN ZONING ORDINANCE

Section 6. Plats.

Each application for a building permit shall be accompanied by a plat in duplicate drawn to scale showing the actual dimensions of the lot to be built upon, the size of the building to be erected, the setback of existing buildings in the block and all other information that may be necessary to provide for the enforcement of this ordinance. A record of such applications and plans shall be kept in the office of the Building Commissioner. Where application is made to enlarge an existing non conforming use, the application shall be accompanied by an affidavit giving the description of the premises owned at the date of the passage of this ordinance.

Section 7. Occupancy Permits.

No land shall be occupied or used and no building hereafter erected or altered shall be occupied or used in whole or in part for any purpose whatsoever until a certificate of occupancy shall have been issued by the Building Commissioner stating that the building and premises comply with all the building and health laws and ordinances of the City of Waukegan and with the provisions of this ordinance and amendments hereafter duly enacted.

No change of use shall be made in any premises or building or part thereof now or hereafter erected or altered that is not consistent with the provisions of these regulations, and no change shall be made in the use of a building or premises without a permit having first been issued by the Building Commissioner, and no permit shall be issued to make such a change unless it is in conformity with the provisions of this ordinance and amendments thereto hereafter duly enacted.

Certificates for occupancy and compliance shall be applied for at the same time with the application for a building permit and shall be issued within ten (10) days after the erection or alteration of such buildings shall have been lawfully completed. A record of all certificates shall be kept on file in the office of the Building Commissioner, and copies shall be furnished on request to any persons having a proprietary or tenancy interest in the building affected. A fee of two dollars shall be charged for each original certificate and one dollar for each copy thereof.

Section 8. Interpretation; Purpose.

In interpreting and applying the provisions of this ordinance, they shall be held to be the minimum requirements for the promotion of the public safety, health, convenience, comfort, prosperity and general welfare. It is not intended by this ordinance to interfere with or abrogate or annul any ordinances, rules, regulations or permits previously adopted or issued, or which shall be adopted or issued, and which are not in conflict with any of the provisions of this ordinance; nor is it intended by

WAUKEGAN ZONING ORDINANCE

this ordinance to interfere with or abrogate or annul any lawful easements, covenants, or other agreements between parties, provided, however, that where this ordinance imposes a higher standard upon the use of buildings or premises or upon height of buildings, or requires larger open spaces than are imposed or required by such ordinances, rules, regulations or permits, or by easements, covenants, or agreements the provision of this ordinance shall control.

Section 9. Board of Appeals

Creation and Membership: A board of Appeals is hereby authorized to be established. The word "Board" when used in this section shall be construed to mean the Board of Appeals. The said Board shall consist of five (5) members appointed by the Mayor of the City and subject to confirmation by the City Commission. One of said members shall be by the Mayor designated as Chairman of said Board and shall hold his office for a period of five years and until his successor is appointed and qualified. The other members shall be by the Mayor designated to hold office for periods of four years, three years, two years and one year respectively, and until their successors are appointed and qualified. At the expiration of the respective terms of office hereby created, and thereafter, the members of said Board shall be appointed in the manner hereinabove set forth for a term of five years each and until their respective successors are duly appointed and qualified. All of the members of said Board shall serve without compensation, and they shall be subject to removal by the Mayor and City Commission, but only for cause and after public hearing.

Meetings: All meetings of the Board of Appeals shall be held at the call of the Chairman and at such other times as such Board may determine. Such Chairman, or in his absence the Acting Chairman, may administer oaths and compel the attendance of witnesses. All meetings of such Board shall be open to the public. Such Board shall keep minutes of its proceedings, showing the vote of each member upon every question, or if absent or failing to vote, indicating such fact, and shall also keep records of its examinations and other official actions. Every rule, regulation, every amendment or repeal thereof and every order, requirement, decision or determination of the Board shall immediately be filed in the office of the Board and shall be a public record.

Duties: Such Board of Appeals shall hear and decide appeals from and review any order, requirements, decision or determination made by the Building Commissioner pursuant to this ordinance. It shall also hear and decide all matters referred to it or upon which it is required to pass under this ordinance. The concurring vote of four members of the Board shall be necessary

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to reverse any order, requirement, decision or determination of the Building Commissioner, or to decide in favor of the applicant any matter upon which it is required to pass or to effect any variation in the ordinance. Such an appeal may be taken by any person aggrieved or by an officer, department, board or bureau of the municipality. Such appeal shall be taken within such time as shall be prescribed by the Board of Appeals by general rule, filing with the Building Commissioner and with the Board of Appeals a notice of appeal, specifying the grounds thereof. The Building Commissioner shall forthwith transmit to the Board of Appeals all the papers constituting the records upon which the action appealed from was taken.

Powers: (1) The Board of Appeals shall fix a reasonable time for the hearing of the appeal and give due notice thereof to the parties and decide the same within a reasonable time. Upon the hearing, any party may appear in person or by agent or by attorney. The Board of Appeals may reverse or affirm, partly or wholly, or may modify the order, requirement, decision or determination as in its opinion ought to be made in the premises, and to that end shall have all the powers of the officer from whom the appeal is taken. Where there are practical difficulties or unnecessary hardship in the way of carrying out the strict letter of this ordinance, the Board of Appeals shall have the power in passing upon appeals, to vary or modify, the application of any of the regulations or provisions of this ordinance relating to the use, construction, or alteration of buildings or structure or the use of land, so that the spirit of the ordinance shall be observed, public safety and welfare secured, and substantial justice done.

(2) The Board shall have the power to recommend to the City Commission such changes in the District boundaries or regulations as it may deem necessary or desirable, as more particularly set forth in Section 10 of this ordinance.

(3) The Board may from time to time adopt such rules and regulations as may be deemed necessary to carry into effect the provisions of this ordinance.

(4) The Board shall have the power to call on any of the other city departments for assistance as may be reasonably required.

WAUKEGAN ZONING ORDINANCE

Section 10. Changes and Amendments.

The regulations imposed and the Districts created by this ordinance may be amended from time to time by ordinance, but no such amendments shall be made without a hearing before the Board of Appeals which is hereby designated as a Special Commission for this purpose.

The Board of Appeals may of its own motion, or upon petition signed by one or more property owners of any District or portion thereof, or upon instruction from the City Commission, cause to be prepared a notice indicating the changes proposed to be made in the regulations or in the District boundary lines, describing the boundaries of the territory to be affected. Such notice shall state the time and place of the public hearing for consideration of such proposed amendment, supplement, or change and the place where maps of the proposed amendment, supplement or change will be accessible for examination by interested parties.

Notice of such public hearing shall be published at least fifteen (15) days in advance thereof in at least one newspaper of general circulation in the City of Waukegan. After such public hearing the Board of Appeals shall report to the City Commission on the proposed amendment, supplement, or change and may cause an ordinance authorizing such proposed amendment, supplement, or change to be introduced in the City Commission of the City of Waukegan. Such hearing may be adjourned from time to time. Whenever a written protest against such proposed amendment, supplement, or change, signed and acknowledged by the owners of twenty (20) per cent of the frontage proposed to be altered or by the owners of 20 per cent of the frontage immediately adjoining in the same block or in the block back of or across an alley therefrom, or by the owners of twenty (20) per cent of the frontage in the block directly opposite the frontage proposed to be altered, shall have been filed with the Clerk of the City within thirty days after said public hearing, the ordinance providing for such proposed amendment, supplement, or change shall not be passed except by the favorable vote of the two-thirds of the members of the City Commission.

Section 11. Completion of Buildings under Existing Permits.

Nothing herein contained shall require any change in the plans, construction or designated use of a building for which a building permit has been heretofore issued, or complete plans for which are on file with the Commissioner at the time of the passage of this ordinance, and a permit for the erection of which is issued within one month of the passage of this ordinance, and the construction of which, in either case shall have been diligently prosecuted within six months of the date of such permit, and which entire building shall have been completed according

WAUKEGAN ZONING ORDINANCE

to plans as filed within one year from the date of the passage of this ordinance.

Section 12. Violation, Penalty, Enforcement.

Any person, firm or corporation who violates, disobeys, omits, neglects or refuses to comply with, or who resists the enforcement of any of the provisions of this ordinance shall, upon conviction, be fined not less than ten (10) dollars nor more than one hundred (100) dollars for each offense and each day that a violation shall continue shall constitute a separate offense.

Section 13. Validity of Ordinance.

All ordinances or parts of ordinances in conflict herewith are herewith repealed. If any section, paragraph, subdivision, clause or provision of this ordinance shall be invalid, such invalidity shall apply only to the section, paragraph, subdivision, clause or provision so invalid, and the remainder of this ordinance shall be valid and effective.

Section 14. When Effective.

This ordinance shall be in full force and effect from and after its passage and publication in accordance with the law.

THEO. H. DURST,
Mayor.

Presented and read July 31st, A. D. 1924.

Passed Aug. 14th, A. D. 1924.

Signed Aug. 15th, A. D. 1924.

Published Aug. 16th, A. D. 1924.

Attest: J. H. MARSEILLES, City Clerk.

Approved July 31st, A. D. 1924.

WAUKEGAN PLUMBING ORDINANCE

**An Ordinance Amending Chapter 45 of the
Revised Ordinances of the City of Waukegan,
Passed September 25th, A. D. 1905 and
Published October 24th, A. D. 1905**

**Be It Ordained by the City Council
of the City of Waukegan:**

Section 1. That Chapter 45 of the Revised Ordinances of the City of Waukegan, passed September 25th, A. D. 1905 and published October 24th, A. D. 1905, be amended so as to read as follows:

Section 2. Board of Examiners Created. There is hereby created a board of examiners of plumbers, consisting of three members, one of whom shall be the City Physician of said city, who shall be ex-officio chairman of said Board of Examiners, a second member who shall be a master plumber, and a third member who shall be a journeyman plumber. Said second and third members shall be appointed by the City Council, and they shall hold their office for the term of one year from the first day of May in the year of their appointment, and until their successors are duly appointed. One of the members of the board appointed by the City Council shall be chosen by said board as secretary, and it shall be unlawful for any member of said board of examiners to sell or be interested in the sale of any material to be used in the examination of plumbers.

Section 3. Meetings of Board—Examination—Fees. Said Board of Examiners shall from time to time meet and designate the time and places for the examination of all applicants desiring to engage in or work at the business of plumbing within the jurisdiction of said board, and shall examine said applicants as to their practical knowledge of plumbing, house drainage and plumbing ventilation, and if satisfied of the competency of such applicant, shall thereupon issue a certificate to such applicant authorizing him to engage in or work at the business of plumbing, as master plumber, employing plumber or journeyman plumber as the case may be. The fees for a certificate for a master plumber or employing plumber shall be fifty (\$50.00) dollars, and for a journeyman plumber one (\$1.00) dollar, which shall be paid to the City Collector for the use of said City, as other moneys by him collected; and an annual renewal fee of ten (\$10.00) dollars for each master or employing plumber, and one

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(\$1.00) dollar for each journeyman plumber shall be paid in advance.

Section 4. Certificate Necessary—Listing Same. No person shall engage in or work at the business of plumbing in said city, either as a master plumber or employing plumber, or as a journeyman plumber, unless he shall have made application to, taken an examination before and received a certificate from said board of examiners, or some other like lawfully constituted board of examiners within the State of Illinois, which said certificate shall be listed with and a full and complete record kept by the City Clerk. Said record shall show the name of the person to whom such certificate has been issued, whether as a master or employing plumber, or as a journeyman plumber, the date of issuing same and by what board of examiners issued; also the date of revocation thereof, if the same shall have been revoked, and shall be open at all reasonable times to public inspection.

Section 5. Permit for Work Necessary—Bond. No plumbing work of any kind, except the repairing of leaks within buildings shall hereafter be done within said city, without a permit being first issued therefore by the City Clerk. And no such permit shall be issued by said Clerk unless the person applying therefor shall have filed within a year preceding such application, in the office of the City Clerk, a bond in the sum of one thousand dollars, with sureties, to be approved by the City Council conditioned, among other things, that the applicant will indemnify and save harmless the City of Waukegan from all accidents and damages arising from any negligence or unskillfulness in the execution or protection of his work, or from any unfaithful or inadequate work done under or by virtue of any permit that may be issued to him by the City Clerk of said City, and that he will also, if required by the proper Commissioner, restore the streets, sidewalks and pavements over any pipe he may lay, and fill all excavations made by him, so as to leave said streets, sidewalks and pavements in as good state and condition as he found them, and will keep and maintain the same in good order for a reasonable time thereafter, to the satisfaction of the Commissioner of Public Works; and further conditioned that he will pay all fines that may be imposed upon him for a violation of any ordinance, rule or regulation adopted by the City Council or department of public works relating thereto, and that he will

conform to all the lawful regulations of the City pertaining to the business of plumbing, in accordance with the ordinances of the City and the rules and regulations of the Department of Health.

Section 6. Doing Work Without Permit—Penalty. Any person who shall lay any water service pipe or introduce into or about any building or on any grounds, any water pipes, or do any plumbing work in any building or on any grounds, for the purpose of connecting such pipes or plumbing work with the pipes of the water works of the City of Waukegan, or of preparing them for such connections, with the view of having such premises supplied with water by the water works, or who shall make an addition to or alterations of any water pipe, bath, water closet, stop cock or other fixture or apparatus for the supplying of any premises with water without having first obtained a permit for doing such work from the City Clerk, shall be subject to a fine of not less than ten dollars and not exceeding one hundred dollars.

Section 7. Change in Work—Permit Corrected. Whenever any material change is to be made in any plumbing work, beyond that specified in the permit therefore, the plumber is hereby required to give previous notice to the Commissioner of Public Health and Safety, presenting the original permit for correction and record.

Section 8. Permits To Be Returned—Report. All permits issued for any work to be done under the authority of this chapter shall be returned to the Inspector within twenty-four hours after the work shall be completed who shall add a written statement of the facts and the time water was turned on for use.

Section 9. Work Subject to Approval of Commissioners—Defective Work To Be Made Good. All work done by plumbers shall be subject to the inspection, supervision and approval of the Inspector or Commissioner of Public Health and Safety, and all faulty and defective work which may at any time be discovered shall be made satisfactory to said Commissioner and no further permit shall be issued to the party in default under any of the provisions of this ordinance.

Section 9-A. The general inspector who shall have charge of the inspection of plumbing shall have in addition to the certificate of the Civil Service Commission, the qualifications required by the laws of Illinois for the conduct of the business of journeyman plumber. He shall be in no way connected with any firm or corporation in any capacity, or be interested financially with said parties in the business of plumbing or drain laying.

Rules and Regulations for the Materials, Construction, Alterations and Inspection of all Plumbing and Sewerage in the City of Waukegan

Section 10. Materials—Quality. All materials used by any plumber in connection with any work done by him, or under any permit issued to him, as hereinbefore provided, must be of the best quality free from defects, and all work must be executed in a thorough workmanlike manner.

Section 11. Excavation in Streets—How Made, Etc. In making excavations in streets, alleys or highways, for the laying of service pipes or making repairs or for any other purpose, the paving material and earth removed must be kept separate and deposited in a manner that will occasion the least inconvenience to the public, with provision for the passage of water along any gutter, and a safe passageway for foot travel.

Section 12. Lead Pipe—Quality and Weight. No lead pipe subject to City Water pressure shall be used in any work done under the authority of a permit issued by the City of Waukegan, except such as is known to the trade as X strong, and in no case less than $\frac{3}{4}$ " in diameter and must weigh not less than as follows:

$\frac{3}{8}$	inch internal diameter	2	lbs. per lineal foot.
$\frac{1}{2}$	" " "	$2\frac{1}{2}$	" " " "
$\frac{5}{8}$	" " "	3	" " " "
$\frac{3}{4}$	" " "	$3\frac{1}{2}$	" " " "
1	" " "	$4\frac{3}{4}$	" " " "
$1\frac{1}{4}$	" " "	6	" " " "
$1\frac{1}{2}$	" " "	$7\frac{1}{2}$	" " " "
$1\frac{3}{4}$	" " "	8	" " " "
2	" " "	9	" " " "

Section 13. Pipe For Street Service—Quality and Size. No pipe shall be used for the purpose of street service of a different material or size than herein specified, except by special permit, and all service pipe less than two inches internal diameter, within the limits of any street or alley, must be lead.

Section 14. Service Pipes—How Laid. All service pipes leading from the street mains to the lot line shall be laid in the ground to a depth of not less than five feet below the established street grade, nor shall any service pipe be left with less than five feet of cover, and said pipe shall be laid in such manner and be of such surplus length as to prevent breakage or a rupture by settlement, and all joints in said pipe must be of the kind termed "Plumber's wiped joints". The connection of pipe by the so-called "cup joint" is prohibited.

Section 15. Same—To Have Stop Cock and Waste Cock. Every service pipe must be provided with a stop and waste cock inside of building for each consumer, easily accessible, placed

beyond damage by frost and so situated that the water can be conveniently shut off and drained from the pipes.

Section 16. Same—Stop Cock in Street—How Placed and Protected. Each and every water consumer must have a T handle roundway stop cock inserted into the service pipe one foot from outside edge of sidewalk in the parkway. Where sidewalk covers the entire parkway, the stop cock must be inserted into the service pipe two feet inside of edge of curb. Each and every stop cock must be protected with a cast iron Buffalo stop cock box at least five feet long, and longer if the case required and with a two and one-half inch internal diameter with the word "water" cast on the cover. Such stop cock and box must be placed by the plumber. The said stop box in all cases must be placed plumb and square over said stop cock and level with top of sidewalk or curb.

Section 17. House Drain Pipes—Quality, Size. All house drain pipes and branches within buildings must be of extra heavy cast iron. The least diameter of soil pipe permitted for house drain is four inches. When the case requires that the house drain shall run under and through any house or building and receive the discharge of all the plumbing fixtures and storm water, the main drain pipe must be four inches in diameter.

Section 18. Same—Sink and Laundry Waste Pipes—Sizes—Receiving Basin. The drain pipe receiving the discharge of waste from kitchen and pantry sinks and laundry tubs or any other receptacle likely to contain grease in any form must be two inches in diameter; the drain must be as short and direct as possible and discharge its contents into a brick basin outside of building.

Section 19. Same—Connection with Sewer—Opening in Wall. The house drain must properly connect with the house sewer at a point not less than two feet outside of the outer wall, vault or area wall of the building. An arched or other proper opening must be provided for the drain in the wall to prevent damage by settlement.

Section 20. Same—Fall Of—How Laid—Pipe Hooks Prohibited. The house drain pipe must have a uniform fall of one-fourth inch to the foot, and must be securely ironed to the walls, laid in trenches of uniform grade, or suspended to the floor timbers by strong iron hangers at intervals of not more than five feet. The use of pipe hooks for support drains is prohibited.

Section 21. Clean-Out Connection—How Placed—Size of Plugs. Near the exit of drain, where drain is thirty feet or more inside the building and at the end of all drain branches within building must be placed an extra heavy brass and iron cleanout connection in an accessible position above the level of finished floor. Cleanout plugs must be of same size as the drain they are inserted into.

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Section 22. House Drains—Arrangement Of. The arrangement of house drain pipes must be as direct as possible. All branches and changes in direction must be made with Y branches, one-fifth, one-sixth, one-eighth, one-sixteenth and long sweep one-quarter bends.

Section 23. Yards and Areas.—To Be Graded, Etc., and Drained—Area Drains To Be Trapped and Protected. Yards and areas shall be properly graded, cemented, flagged or well paved and properly drained. When the area drains and floor washes are connected with the house drain they must be separately and effectively trapped with a deep seal trap.

Section 24. Subsoil Drains, Settling Basin, Contents of, How Emptied, Drain Tile Basin in Building Prohibited. When subsoil drains are placed around the outside wall of house or building the contents must discharge into a brick settling basin properly trapped. The contents from settling basin must be discharged into the drainage system.

Section 25. Soil and Waste Pipes—Material. All soil, waste and revent pipes used within any building must be extra heavy cast iron, or steel, or wrought iron, galvanized inside and outside, or lead.

Section 26. Same—Extension Above Roof—Height. Soil and waste pipes receiving the discharge of fixtures on and above the first floor of any building must be extended in full caliber to a point at least six inches through roof or fire wall when roof is flat, and at least five feet above or ten feet away from any opening or window of the adjoining building.

Section 27. Increasers, Size and Position Of—Offsets—How Made—Caps, etc. To Ventilation Pipe Prohibited. Where the vertical soil, waste or vent pipe passes through the roof, the pipe must have an increaser at least two inches greater than the pipe proper when stock is less than four inches. And in no case shall the increaser be less than four inches in diameter. The increaser must be placed below the roof. Necessary offsets above the highest fixture branch must not be made at an angle less than 45 degrees to the horizontal. No caps, cowls or bends shall be affixed to the top of such ventilation pipe.

Section 28. Revent Pipe—When Dispensed With. Where a single fixture other than water closet is located on a floor not more than six feet from ground or floor of basement and no other

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fixture, the vent may be dispensed with, provided, the trap of said fixture is not located more than three feet from the waste pipe. But in all such cases the two-inch waste pipe must run up through the roof the same as other waste pipe.

Section 29. Same. Where a single water closet or any other plumbing fixture is located on floor more than six feet above the ground and has an independent soil or waste pipe of undiminished size from ground to and through the roof, the vent may be dispensed with; provided, the trap of said fixture is located not more than three feet away from the said soil or waste pipe, and that no other fixture on the floors above or below is connected or will be connected with any pipe from said single fixture, and provided further, that a non-syphoning trap, tested and approved by the Commissioner of Health and the plumbing inspector shall be used for such fixtures.

Section 30. Soil Pipes—Size Of. The least internal diameter of soil pipe permitted is four inches. A vertical line of soil pipe receiving the discharge from a line of water closets and bathroom fixtures from five or more floors must be five inches internal diameter with four-inch branches.

Section 31. Same. A vertical line of soil pipes receiving the discharge from six or more water closets and bathroom fixtures, in buildings where bathrooms are close together, must be five inches internal diameter with four-inch branches.

Section 32. Waste Pipes—Size Of. The least internal diameter permitted for waste pipes is two inches. A vertical line of waste pipe receiving the discharge from kitchen sinks on five or more floors must be three inches internal diameter, with two-inch branches.

Section 33. Same. Where a vertical line of waste pipe receives the discharge from six or more sinks, backing up to one another, the waste pipe must be three inches internal diameter, with two-inch branches.

Section 34. Soil and Waste Pipes—Diameters—Tabulated. The diameters of soil and waste pipes must not be less than those given in the following table:

Main soil pipe.....	4	inches
Main soil pipe for water closets on five or more floors.....	5	"
Main soil pipe for buildings receiving soil and waste from three or more double bath rooms.....	5	"
Branch soil pipe.....	4	"
Main waste pipe.....	2	"
Main waste pipe for kitchen sinks on 5 or more floors.....	3	"
Main waste pipe for buildings receiving waste from three or more double kitchen sinks.....	3	"
Branch waste for kitchen sink.....	1½	"
Branch waste for laundry tubs.....	1½	"
Branch waste for laundry tubs when set in ranges of three or more.....	2	"
Branch waste for urina's.....	1½	"
Branch waste for slop sinks.....	1½	(Or Larger)

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Branch waste for other fixtures.....	1½ inches
Bath Tubs, Wash basins.....	1½ "

Section 35. Same—Arrangement Of. The arrangement of soil and waste pipes and branches must be as direct as possible. All necessary offsets on soil and waste pipes must be made with offset fittings or 45 degree fittings to the horizontal. All branches and changes in direction shall be made with Y branches, sanitary T's one-fifth, one-sixth, one-eighth, one-sixteenth and one-quarter bends. Sanitary T's will be permitted on vertical lines only.

Section 36. Connections for Water Closets—Only Revent Branch Permitted. No connections to lead branches for water closets and slop sinks will be permitted except the required revent branch.

Section 37. Other Fixtures—Independent Opening to Soil Pipe—Fall of Branches. All other fixtures in bath rooms must have an independent waste opening of two inches in diameter into the soil pipe. Branch soil and waste pipe must have a fall of at least one-quarter of an inch to the foot.

Section 38. Bends—Hubs—Increasesrs—Offsets, Etc.—What Kind Prohibited. Double hubs, short roof increasesrs, bands and saddles, combination ferrules, wrought and cast iron selder nipples, hand hole cleanouts with thumb screws, tapped wastes and vents are all strictly prohibited.

Section 39. Traps at Foot of Soil and Waste Pipes Prohibited. There shall be no traps at foot of soil or waste pipes.

Section 40. Vertical Pipes—How Supported. All vertical soil waste and vent pipes must be supported on strong cast iron pipe rests, at intervals of not more than ten feet.

Section 41. Separate System—Each Building to Have. The entire plumbing and drainage system of each house or building must be entirely separate and independent of that of any other house or building.

Section 42. Cast Iron Pipe and Fittings Must Be Tar Or Asbestos Coated—Quality and Weight. All cast iron pipe and fittings used within house or building for drains, soil waste vents and revents must be tar or asbestos coated inside and outside, sound cylindrical and smooth, free from cracks, sand holes and other defects, and of uniform thickness and of the grade known in commerce as extra heavy. The following weights per lineal foot will be accepted as extra heavy:

2 inches	5½ pounds	per	lineal	foot
3 "	9½	"	"	"
4 "	13	"	"	"
5 "	17	"	"	"
6 "	20	"	"	"
7 "	27	"	"	"
8 "	33½	"	"	"
10 "	45	"	"	"
12 "	54	"	"	"

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Section 43. Fittings To Correspond with Pipe. All fittings used in connection with such pipe shall correspond with it in weight, quality and coating.

Section 44. Joints How Made. All joints must be made with picked oakum and molten lead, and hand calked so as to make them gas tight. Not less than twelve ounces of fine, soft pig lead must be used at each joint for each inch in the diameter of the pipe.

Section 45. Galvanized Pipe. Must be of Standard Weight when galvanized wrought iron pipe is used.

Section 46. Joints, To Be Screwed—Burr To Be Reamed Out—Short Nipples—Thickness Of—Thickness of Pipes. All joints shall be screwed joints made up with red lead, and the burr formed in cutting must be carefully reamed out. The pipe shall not be less than the following average thickness and weight per lineal foot.

DIAMETER	THICKNESS	WEIGHTS PER LINEAL FOOT
1½ inches	0.14 inches	2.68 pounds
2 "	0.15 "	3.61 "
2½ "	0.20 "	5.74 "
3 "	0.21 "	7.54 "
3½ "	0.22 "	9.00 "
4 "	0.23 "	10.66 "
4½ "	0.24 "	12.34 "
5 "	0.25 "	14.50 "
6 "	0.28 "	18.76 "
7 "	0.30 "	23.27 "
8 "	0.32 "	28.18 "
9 "	0.34 "	33.70 "
10 "	0.36 "	40.06 "
11 "	0.37 "	45.02 "
12 "	0.37 "	48.96 "

Section 47. Brass Ferrules—Quality—Size—Weight. Brass ferrules must be best quality, bell shaped, extra heavy cast brass and must not be less than 4 inches long. The diameters and weights of brass ferrules shall be as follows:

DIAMETERS	WEIGHTS
2¼ inches	1 pound 6 ounces
3½ "	1 " 12 "
4½ "	2 " 8 "

Section 48. Ferrules—Certain Ones Prohibited—Soldering Nipples Material and Size—Weight. One and one-half inch ferrules are not permitted. Soldering nipples must be heavy case brass or of brass pipe, iron pipe size, for water supply connections. When cast they must weigh not less than as follows:

DIAMETERS	WEIGHTS
1½ inches	0 pounds 8 ounces
2 "	0 " 14 "
2½ "	1 " 6 "
3 "	2 " 0 "
4 "	3 " 8 "

Section 49. Brass Caps for Cleanouts—Weights and Size—Nuts for Screw Caps—Size of—Cleanout Ferruls—Must Be

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Equal in Weight Etc., To Calking Ferrules. Brass screw caps for cleanouts must be extra heavy, not less than one-eighths of an inch thick. The screw cap must have a solid square or hexagonal nut.

Section 50. Screw Caps—When of Brass—Size of Engaging Parts—Size of Cleanouts. Where cleanouts are required by rules and by the approved plans, the screw cap must be of brass. The engaging parts must have not less than six threads and be tapered.

Section 51. Lead Pipe—Use Of—Restricted. The use of lead pipe is restricted to the short branches of the soil and waste pipes, bends and traps, and roof connections of inside leaders. "Short branches" of lead pipe shall be construed to mean not more than:

8 feet of	1½	inch pipe
4 "	" 2	" "
2 "	" 3	" "
2 "	" 4	" "

All connections between lead pipes and between lead and brass or copper pipes must be made by means of "Wiped Solder Joints."

Section 52. Lead Waste, Soil, Vent and Flush Pipes—Quality and Weight of. All lead waste, soil and vent pipes and flush pipes must be of the best quality, known in commerce as "acqueduct", extra light, and of not less than the following weights per lineal foot:

Diameter	Weights per Lineal Foot
1¼ inches	2 pounds
1½ "	3 "
2 "	4 "
3 "	6 "
4 "	8 "

Section 53. Testing Plumbing System—How Made. The entire plumbing and drainage system within the building must be tested by the plumber, in the presence of the inspector of plumbing, under a water test, as directed. All pipes must remain uncovered in every part until they have successfully passed the test. The plumber must securely close all openings, as directed by the inspector of plumbing. The use of wooden plugs for this purpose is prohibited.

Section 54. Water Test—How Made. The water test will be applied by closing the lower end of the main house drain and

filling the pipes to the highest opening above the roof with water. The water test shall include at one time the house drain and branches, all vertical and horizontal soil, waste and vent and leader lines, and all branches therefrom to point above the surface of the finished floor and beyond the finished face of walls and partitions. Deviation from the above rule will not be permitted, unless upon written application to and approval by the Commissioner of Health or Inspector of Plumbing. If the drain or any part of the system is to be tested separately there must be a head of water at least six feet above all parts of the work so tested, and special provision must be made for including all joints and connections in at least one test.

Section 55. Defective Work Must Be Made Good. Defective pipes and work must be removed and all defective work made good and to conform with the provisions of this chapter.

Section 56. Notices for Inspection—How Given—To Be Numbered and Filed by Commissioner of Health—New Notice—When Given. All notices for inspection must be directed to the City Clerk, and must be made out on blanks furnished by the Department of Health for such purposes. The plumber must give such notice eighteen hours before work is ready for inspection, exclusive of Sundays and legal holidays; provided hereunder that if the inspector can not be at the place at the time mentioned, he may in turn notify the plumber by a written notice delivered at his office or to any of his employees, stating what hour he can inspect such work; at least four hours before the date stated in the notice received.

Section 57. Same—Main Lines and Branches—Material and Size—Connection with Soil or Waste Line—How Made. Main vent pipe lines and branches must be of galvanized wrought or cast iron pipe. They must be increased in diameter and extended above the roof as required for waste pipes. They must be connected with the adjoining soil or waste line by means of inverted Y branch not less than one foot above the highest possible intended fixture, but this will not be permitted when there are fixtures on four or more floors.

Section 58. Branches—Angle Of. All branches must be made with standard offsets or 45 degree elbows.

Section 59. Branch Vent Pipes. How Connected. Branch vent pipes must be connected above the top of all connecting fixtures to prevent the use of vent pipes as soil or waste pipes. Branch vent pipes must be connected as near to the crown of the trap as possible.

Section 60. Earthenware Traps—How Ventilated—Branch Vent Pipe How Run and Connected—Revent Horns in water Closets Prohibited. Earthenware traps for water closets and slop sinks must be ventilated from the branch soil or waste pipe just below the trap, and this branch vent pipe must be so run

and connected as to prevent all danger of obstruction from condensation or otherwise. No other pipe shall be connected with such revent. Water closets must have no revent horns.

Section 61. Vent Pipes—When Dispensed With. Where there is only one water closet in a bath room, with other plumbing fixtures, and no other water closet is now or hereafter to be connected with the same soil pipe, the vent to said water closet may be dispensed with; provided the said water closet is not located more than two feet away from the soil pipe.

Section 62. Vent Pipes—Size Of. The sizes of vent pipes throughout must not be less than the following: The main vent and long branches for water closets, in buildings of four or more stories in height, must be at least three inches in diameter, with a two-inch branch for each water closet trap. This rule shall apply to all other fixtures, except that branches may be of same size as trap, and main pipe may be reduced to two inches for the two lower stories. Vent pipes for water closets in residences must be two inches, with same size branches, and for other fixtures not less than one and one-half inches, with branches same size as trap. Revent pipe for drum trap may be dispensed with.

Section 63. Ventilation—Brick—Sheet Metal, Earthenware, Etc., Prohibited. No brick, sheet metal, earthenware or chimney flue shall be used for a house sewer or drain ventilator, or to ventilate any trap, soil or waste pipe.

Section 64. Separate Traps for Every Fixture—How Placed. Every fixture must be separately trapped by a water sealing trap placed as close to the fixture outlet as possible.

Section 65. Single Traps—When Permitted. A set of wash trays may be connected with a single trap, or into the trap of an adjoining sink, provided both sink and tub waste outlets are on the same side of the waste line and the sink is nearest the line. When so connected the waste pipe from the wash trays must be branches in below the water seal on inlet side of the trap.

Section 66. Discharge From Fixture—Not To Pass More Than One Trap—Traps—How Supported and Set. The discharge from any fixture must not pass through more than one trap before reaching the house drain. All traps must be well supported and set true with respect to their water levels.

Section 67. Drum Traps—For Bath Tubs—Material—How Set. All bath tubs must be trapped by means of a drum trap. The trap must be of extra heavy lead, not less than nine inches long, and must be provided with a four inch brass cleanout screw. The trap is to set so the cleanout screw will be flush with the floor and in no case at a greater distance than two feet from the bath tub outlet.

Section 68. Metallic Strainers—When Required—Brass Trap Screws—When Required—How Placed. All fixtures other than water closets and urinals must have strong metallic strainers or

bars over the outlets to prevent obstruction of the water pipe. All exposed or accessible traps, except water closet traps, must have brass trap screws for cleaning the trap, placed on the inlet side or below the water level.

Section 69. Earthenware Traps—To Have Brass Floor Plates—Joint To Be Made Gas Tight—Rubber Washers for Floor Connections Prohibited. All earthenware traps must have heavy brass plates soldered to the lead bends and bolted to the trap flanges, and the joint made gas tight with a good bed of fresh putty. The use of rubber washers for floor connections is prohibited.

Section 70. Traps—Sizes For. The sizes of traps must not be less than those given in the following table:

Traps for water closets	4	inches	in	diameter
“ “ slop sinks	1½	“	“	“
“ “ kitchen sinks	1½	“	“	“
“ “ wash trays	2	“	“	“
“ “ urinals, earthen	1½	“	“	“
“ “ urinals, stalls	2	“	“	“
“ “ bath tubs				
(lead drum trap)	4	“	“	“
“ “ other fixtures	1½	“	“	“
Wash basins	1¼	“	“	“

Section 71. Overflow Pipes—How Connected. Overflow pipes from fixtures must in each case be connected on the inlet side of trap, and no trap shall be used as a soil or waste pipe.

Section 72. Sediment Pipes—How Connected. The sediment pipe from range boiler may be connected on inlet side of sink trap, or waste into open water supplied sink in basement, or sediment at boiler.

Section 73. Safe and Refrigerator Waste Pipes.—Material—Size Of—Strainers—How Secured. Safe and refrigerator waste pipes must be of galvanized iron, and be not less than one and one-quarter inches in diameter, with lead branches of the same size, with strainers over the inlets secured by a bar soldered to the lead branch.

Section 74. Safe Waste Pipes—Not To Connect Directly With System. Safe waste pipes must not connect directly with any part of the plumbing system.

Section 75. Same—How Discharged. Safe waste pipes must discharge over an open, water supplied, publicly placed, ordinarily used sink placed not more than three and one-half feet above the cellar floor.

Section 76. Same—How Trapped and Discharged. The safe waste pipe from a refrigerator must be trapped at the bottom of the line only and cannot discharge from the ground and floor. It must discharge over an ordinary portable pan, or over some properly trapped water supplied sink as above. In no case shall

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the refrigerator waste pipe discharge over a sink located in a room used for living purposes.

Section 77. Branches—How Made. The branches on vertical lines must be made by Y fittings and be carried up to the safe with as much pitch as possible.

Section 78. Lead Safes—Must Be Graded and Turned. Lead safes must be graded and neatly turned over bevel strips at their edges.

Section 79. Cleanouts For Refrigerator Waste Pipe—When Required. Where there is an offset on a refrigerator waste pipe in the cellar there must be cleanouts to control the horizontal part of the pipe.

Section 80. Tenement and Lodging Houses—Refrigerator Waste Pipes In—Construction and Size. In tenement houses and lodging houses the refrigerator waste pipes must extend above the roof, and must not be larger than one and one-half inches, nor the branches smaller than one and one-quarter inches.

Section 81. Flap Valves—Brass—When Required. Refrigerator waste pipes, except in tenement houses and all safe waste pipes, must have brass flap-valves at their lower ends.

Section 82. Water Closets—How Placed and Supplied—In Tenement Houses. Water closets must never be placed in an unventilated room or compartment. In every case the room or compartment must be open to the outer air or be ventilated by means of an air duct or shaft. Interior water closets shall not be supplied from city supply pipes direct. All water closets within the house must be supplied from special tanks or cisterns, the water of which is not used for any other purpose. A group of water closets may be supplied from one tank, but water closets on different floors shall not be supplied from one tank. In tenement houses there must be a separate cistern for each water closet must be provided for each two families.

Section 83. Cisterns—Valves Of—How Fitted. The valves of cisterns must be so fitted and adjusted as to prevent waste of water.

Section 84. Water Closets In Yard—To Be Separately Trapped—How Arranged and Ventilated. Water closets when placed in the yard must be separately trapped and so arranged as to be conveniently and adequately flushed and their water supply pipes and traps must be protected from freezing. The

compartment for such water closets must be ventilated by means of slatted openings in the doors and roof.

Section 85. Same—Notices To and Consent of Commissioner of Health. Where water closets are proposed to be placed outside of house or building proper, the commissioner of health must be notified and consent to same in writing before the proposed work is started.

Section 86. Water Closets—Bowls—Kind Of. All water closets within house or building proper must have earthenware flushing rim bowls, with trap combined. Pipe wash bowls or hopper closets will not be permitted.

Section 87. Same—Kind Prohibited. Iron, or partly iron, offset washouts, or other water closets having an unventilated space, or whose walls are not thoroughly washed at each discharge will not be permitted. Long hopper water closets will not be permitted except in locations exposed to frost, and the written approval of the Commissioner of Health must be obtained before any such closet is placed.

Section 88. Tanks For Drinking Water—Material and Construction Of. Tanks for drinking water, if indispensable, must not be lined with zinc or galvanized iron. They must be constructed of wood or iron or may be lined with planished copper. The overflow pipes shall discharge from the roof or be trapped and discharge into an open sink; but never into any soil, waste pipe, water closet, trap drain or sewer. Discharge pipes from such tanks shall not be so constructed as to discharge into any drain, connected soil or waste pipe.

Section 89. Leaders—How Constructed. All buildings shall be kept provided with proper metallic leaders for conducting water from the roofs in such manner as shall protect the walls and foundations of said buildings from injury. In no case shall the water from said leaders be allowed to flow upon the sidewalk, but the same shall be connected by water pipe or pipes to the sewer. If there is no sewer in the street upon which such buildings front, then the water from said leaders shall be conducted by proper pipe or pipes below the surface of the sidewalk to the street gutter.

Section 90. Inside Leaders—Material and Construction. Inside leaders must be made of cast iron, wrought iron or steel, with roof connections made gas and water tight by means of a heavy lead or copper drawn tubing wiped or soldered to a brass ferrule or nipple calked or screwed into a pipe.

Section 91. Outside Leaders—Material—Connection With House Drain. Outside leaders may be of sheet metal, but they must connect with the house drain by means of a cast iron pipe extending vertically to the grade level.

Section 92. Leaders—For Rain Water—Not To Be Used For Soil, Etc. Pipes and Vice Versa. Rain water leaders must not be

used as soil, waste or vent pipes, nor shall any such pipe be used as a leader.

Section 93. Steam Engines or Heaters—Connection With—Tow To Be Made. No connection shall be made through which the steam from any engine, heating plant or heater can be discharged into the sewer, except that such discharge first enters a condensing tank that will effectively condense such vapor. All connections to sewer or soil pipe from steam boilers, tanks or other vessels which contain hot water or other liquids, gasses or vapors must be made through condensing and receiving tanks of sufficient size to protect sewers and soil pipes.

Section 94. Privy Accommodations in Cellars, Etc., of Tenement Houses Not Allowed. The general privy accommodations of a tenement house or lodging house shall not be permitted in the cellar, basement or under sidewalks. The placing of such accommodations for stores and other business places shall not be permitted in the cellar, basement or under sidewalks except notice be given to and consent in writing be obtained from the commissioner of health. (See Health-Building Regulations.).

Section 95. Wooden Wash Trays Prohibited. Wooden wash trays and sinks are prohibited inside of any building; they shall be of non-absorbent material.

Section 96. Catch Basin in Building Prohibited. No catch basin shall be allowed in any residence building.

Section 97. Open Flushing. All plumbing fixtures within the building must be entirely open, supported on iron legs or brackets and without any inclosing wood work.

Section 98. Connecting Pipes To Supply Steam Boilers With Water—Direct Flush Pressure Prohibited. Plumbers are prohibited from connecting pipes whereby high pressure steam boilers may be supplied with water direct with city pressure. All such boilers shall be provided with a tank or other receptacle of sufficient capacity to hold at least six hours supply in case of a pipe district being shut off to repair mains or to make connections or extensions. In such cases the city of Waukegan will not be responsible for a lack of water for steam boilers, or for any other purpose.

Section 99. Water Closet, Etc., Passing Water Through When Not In Use Prohibited. No water closet, or apparatus of any kind, shall be connected with the water supply through which the water will pass when not in use.

Section 100. Penalty. Any person violating any provision of this chapter shall be subject to a penalty of not less than five dollars, nor more than fifty dollars, for each and every violation thereof, and in addition his certificate may be revoked by the Commissioner of Health or by the City Council of said City.

Section 101. All ordinances and parts of ordinances in conflict herewith are hereby repealed.

WAUKEGAN PLUMBING CODE

Section 102. An emergency exists affecting the public health and safety and this ordinance shall take effect and be in force ten (10) days after its publication according to law.

J. F. BIDINGER,
Mayor.

Attest: J H. Marseilles
City Clerk.

Passed Dec. 18th, A. D. 1911.

Signed Dec. 18th, A. D. 1911.

Published, Dec. 23rd, A. D. 1911.

Approved, Dec. 18th, A. D. 1911.

ARTHUR BULKLEY,
Corporation Counsel.

Phones: (Office 3060)
(Res. 1085)

Charles E. Kiefer

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